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**OUR
PICKS!**

BEST PRODUCTS OF 2009

**YOUR
PICKS!**



Streamline Your IT Decision Making

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Active Directories p.50**

**Windows Server 2008 R2:
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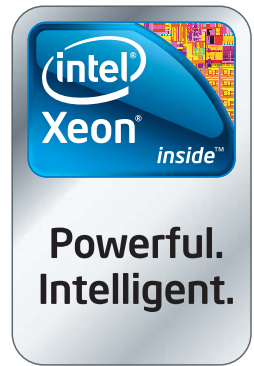
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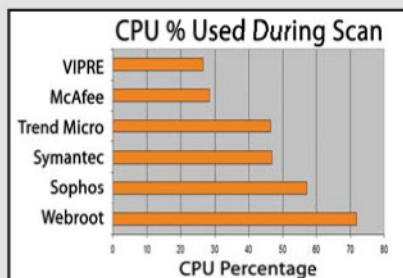
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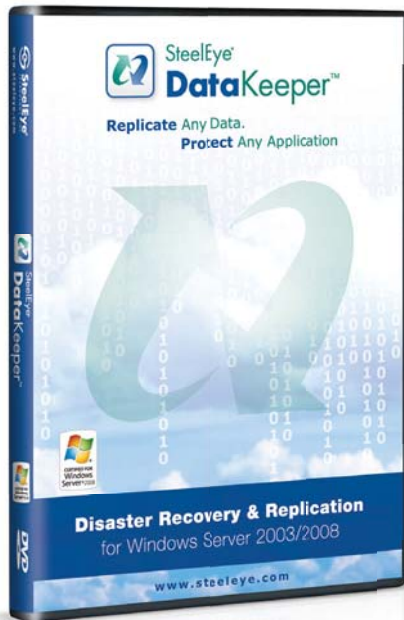
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COVER STORY

**33 2009 Windows IT Pro
Editors' Best and
Community Choice Awards**

Interested in seeing what our editors and IT pro community voted as the top products for 2009 in 30 categories from Active Directory to virtualization? Look no further than the 2009 Editors' Best and Community Choice awards.

BY THE WINDOWS IT PRO EDITORS



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ON THE WEB

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Windows Gatekeeper

Learn about the scope of the built-in Authenticated Users group in a multi-forest Active Directory environment, how to install an Enterprise Certification Authority on an (AD) domain controller, if certificate mapping is still available in IIS 7.0, and what options Windows provides to attach automated actions.

—Jan De Clercq

InstantDoc IDs 103009, 103010, 103011, 103012

Exchange Server 2007 Storage: DAS vs. SAN vs. iSCSI

Microsoft made major changes to storage for Exchange 2007. Find out the benefits and drawbacks of each type of storage for different sizes of deployments.

—Lee Dumas

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Simplify EFS Deployment

Use these two Encrypting File System tools to help centrally manage EFS on desktop and notebook computers and migrate to V2 certificates.

—Russell Smith

InstantDoc ID 102996

Supporting IPv6 in Your Windows Server 2008 Environment

Changes in Windows Server 2008 bring new support for IPv6. Here are the steps you need to take to deploy IPv6 in your environment.

—John Howie

InstantDoc ID 103014

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WRITING FOR WINDOWS IT PRO

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Crockett

IT PRO PERSPECTIVE

"The decision to upgrade to Server 2008 R2 and Windows 7 is primarily a hardware consideration, and unlikely to be made across the board."

To Deploy or Not To Deploy How One IT Pro Is Making the Decision

Sorting through the crush of information surrounding a product launch wave can be daunting. For IT pros contemplating their 2010 budgets and determining whether to include Windows Server 2008 R2, Windows 7, Exchange Server 2010, and/or SQL Server 2008 R2 migrations—just to mention a few—sometimes it's helpful to hear how other IT organizations are approaching these decisions. A recent conversation I had with Matt Becker, systems administrator for a software development company in Pennsylvania, yielded some insights into this decision-making process from the perspective of a medium-sized organization of about 150 users, predominantly developers—in other words, demanding power users.

"This is the smallest number of users I've ever supported," Becker said. "Because they're power users, they can typically take care of most small problems themselves. But when they do have problems, they're a lot bigger. They have a lot of control over their environments—they're always downloading and installing tools." In his previous position at a healthcare company, Becker supported hundreds of users, which was "no big deal" because these users typically had standard configurations. His current company is primarily a Windows shop with about 30 Windows Server 2003 machines. Critical applications include Exchange Server, the e-commerce system, and SharePoint 2007, which represented a significant investment for the company that drove other IT needs further down the list.

"The key driver for SharePoint was version control for the documents shared by the business development division," Becker said. "A lot of people touched those documents, and SharePoint put it all in one place and kept it organized." Becker attended a three-day SharePoint training course, which added to the total cost of the deployment.

Looking ahead to the new product launch wave, Becker boiled down the various factors that will drive his adoption of new technology to include these considerations: compliance, hardware, support, and training. The archiving capabilities in Exchange 2010 might compel Becker to engage in his only real sales pitch to company executives for deploying one of Microsoft's upcoming releases. "We don't have compliance tools in place yet, and we're looking at third-party prod-

ucts," he said. Becker currently has to conduct machine-by-machine email searches to satisfy legal discovery requirements. "But I'm investigating whether Exchange Server 2010 can take care of this."

The decision to upgrade to Server 2008 R2 and Windows 7 is primarily a hardware consideration, and one that isn't likely to be made across the board. Rather than launching a full-scale Server 2008 R2 and Windows 7 deployment, the company will phase in these products as old hardware retires. He also said that any progress on deploying a unified messaging system was dependent on first updating the company's PBX system to VoIP. But the reality for Becker's company is that the SharePoint 2007 deployment pushed infrastructure investments further into the future.

Support issues weigh particularly heavy in Becker's decisions about mobile technology. Declaring PDAs "a nightmare" to support in general, he's rejected Windows Mobile devices outright because of the support issues and has cut support time significantly by deploying BlackBerry devices instead.

And then there's training. Becker admits that his first thought in adopting new technology is always the dread of the learning curve. The three-day course he attended for his company's SharePoint deployment was helpful to him, but he acknowledges that this level of training isn't the norm. He listed some of the usual resources he turns to when he needs to bone up on new technology: books (he still prefers the printed kind), conferences, and training sessions—but only if they include lab sessions.

In the final analysis, most of Becker's decisions will come down to the result of his conversations with executives and end users about which of the overwhelming array of emerging technologies will really make a difference to the business. "It's really up to me to engage them and determine what makes the most sense."

What makes the most sense for your company in this launch wave? I'd love to hear about the factors that are driving your decision-making process for 2010 IT expenditures.



InstantDoc ID 102993

Factors that will drive Becker's adoption of new technology include compliance, hardware, support, and training.

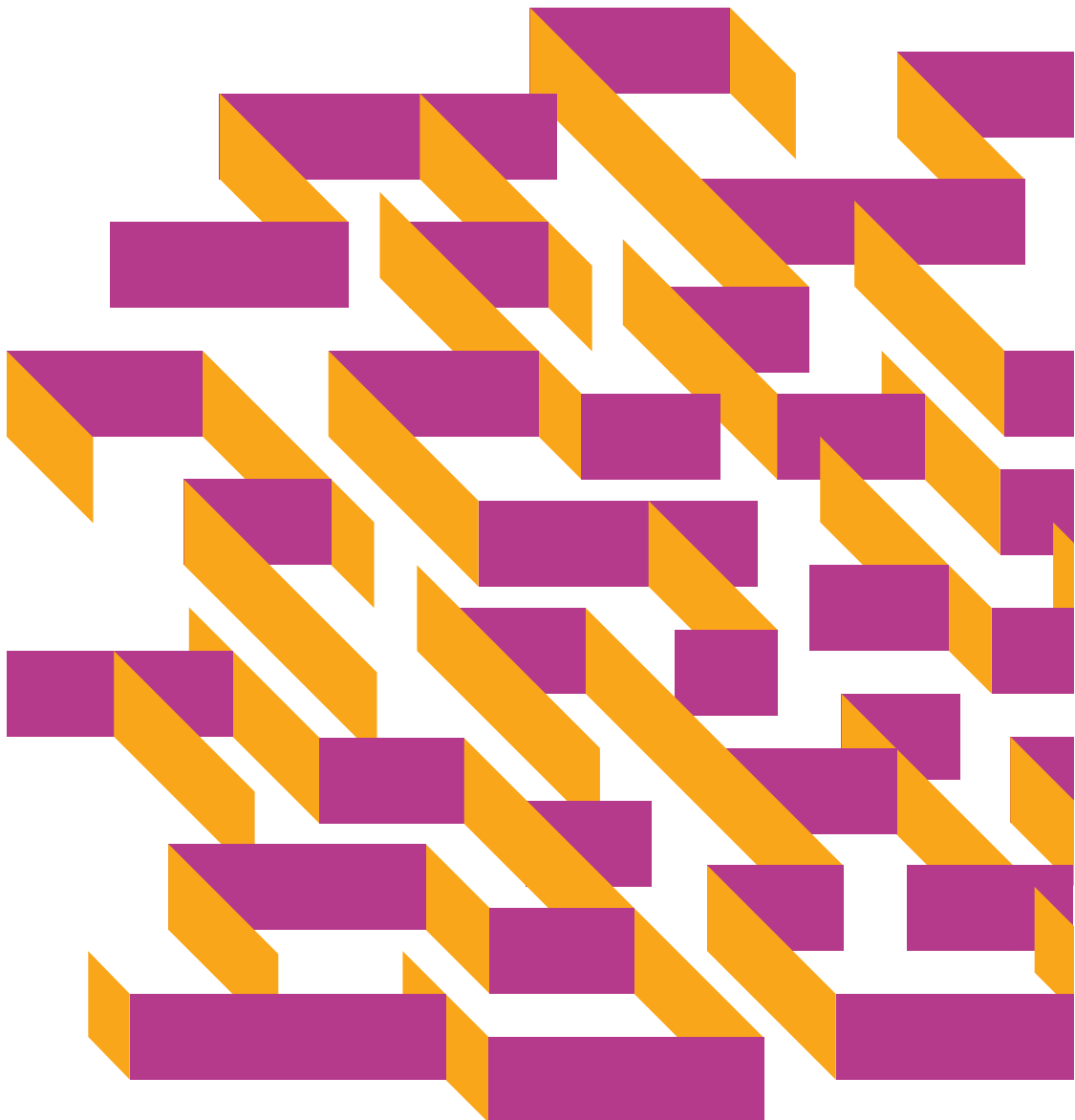
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■ Upgrade Treadmill
■ AD Merger

■ Tyranny of My
■ Palm Pre

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Off the Upgrade Treadmill

I agree with Jeff James in his editorial, "Is the Microsoft Upgrade Treadmill Broken?" (October 2009, InstantDoc ID 102730). We still run Microsoft Office 2003 and Windows XP on every computer in our organization. The new budget year just rolled around, and we'll be ordering new PCs with XP. Microsoft needs to stop trying so hard to be Goliath.

Most people recognize that the Apple iPhone is the greatest thing since sliced bread. So, leave it alone! Instead of trying to compete against the iPhone, Microsoft should consider creating tools that professionals and hobbyists can use to build better apps for it.

It's silly that Microsoft has spent so much time and effort working on a search engine when there are already some great ones out there. My users use Microsoft Word as an electronic typewriter. They don't need 99 percent of the bells and whistles of Word 2007. The same goes for Microsoft Excel. I don't need Office 2010, I don't need Windows Vista or Windows 7, and I certainly don't need Bing.

—Scott Gutauckis

The Tyranny of My

I'd like to thank Paul Thurrott for his continued vigilance to inform the world about all things Microsoft. I've been reading about his experience with Windows 7 for months. One of the best things about Windows Vista was its removal of the word "My" from OS-created and -maintained folders. It is with great sadness that I report, after installing Windows 7, that the Tyranny of My has returned: My Computer, My Data Sources, My

Documents, My Drawings, My eBooks, My Faxes, My iBases, My Keyboard, My Mail, My Monitor, My Mouse, My Music, My Network, My Notebooks, My Pictures, My Projects, My Scans, My Sessions, My Songs, My Stuff, My Templates. So much for the alphabet—let's just file everything under "My"!

I work with about 50 computers, but none of them are mine! They're company computers; they don't belong to the people who use them. I use three programs that repeatedly create the folder My Sessions. It's frustrating to see this terminology back in the OS. Now we'll have to wait at least another three years before we can dream about it going away again.

—Jesse

Goodbye Windows Mobile, Hello Palm Pre!

I read Paul Thurrott's Short Takes article "Despite Pre, Palm Financials Still in Dumpster" (InstantDoc ID 102829). One Palm Pre feature that I haven't seen anywhere else

is its ability to meld two (or more) email/calendar accounts into one view. I can display two separate Microsoft Exchange Server accounts (different domains). I'm a consultant with my own corporate Exchange account and a customer account, so I find this feature incredibly useful. Other smart phones give me only one exchange account; the other must be IMAP or POP. For this feature alone, I'm seriously

thinking about moving from Windows Mobile to the Pre! I would be sorry to see Palm collapse after such a brilliant offering!

—Ze'ev Ionis



Active Directory Merger Advice

I enjoyed Eric B. Rux's article, "Plan and Execute an Active Directory Merger, Part 1" (October 2009, InstantDoc ID 102596). We're currently in the middle of a time-consuming merger process, and we've discovered that it requires much work and planning. One lesson we've learned is that any domain with Exchange Server 2007 can't be renamed, and any server product under Microsoft System Center umbrella must be completely reinstalled in the new domain.

—Eric Sabo

Eric B. Rux's tremendously helpful AD-merger article was very timely for me. My site-to-site VPN is almost ready, and I'll be working on the migration soon, so I'm anxiously awaiting Eric's next article on the topic.

—Jason Sedlaczek

We're glad to hear that readers found Eric's article useful. Part 2 appears in this issue, page 50.

—Amy Eisenberg

Help an IT Guy Out!

Let me say that I'm a big fan of Michael Morales's *What Would Microsoft Do?* column. It's now the first thing I read when I get a new issue. Regarding his September 2009 installment, "Got High-CPU Usage Problems? ProcDump 'Em!" (InstantDoc ID 102479), I'm having my own problems with a slow-booting workstation, and I don't want to rebuild it. Can you point me to a tool that will let me capture what's happening in the system during the boot process?

—Scott Adams

Think you can help Mr. Adams with his problem? Access the online article's Comments section at www.windowsitpro.com, InstantDoc ID 102479, and help a guy out!

—Jason Bovberg
InstantDoc ID 102995

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What if fragmentation never happened?



Even a good defragmenter working invisibly in the background can't touch a specific *hidden source of performance loss* caused by fragmentation that many IT managers are unaware of. Many know that all systems suffer from fragmentation and that fragmentation bottlenecks the slowest component on every computer: the hard drive. Automatic defragmentation catches fragments soon after they are created and returns files to a contiguous state. It's a reactive fix. *But what if fragmentation never happened?*

Today's network efficiencies depend on achieving greater throughput. If it's bottlenecked, it doesn't much matter how much whiz-bang you threw money at in the way of equipment, your productivity suffers. The ability of a server, workstation or laptop to generate high I/Os per second (IOPS) has become one of the key throughput abilities system managers look for when upgrading their networks. I/Os are a critical resource and the more effectively they are employed toward direct production, the more work gets done in the least amount of time.

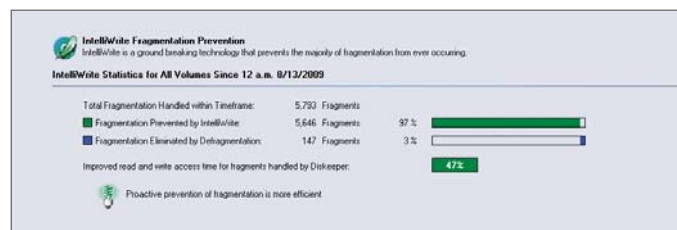
The real damage

When fragmentation occurs, the system has already wasted precious I/O resources by writing files into fragments of space on the disk. This cuts into the system's "effective IOPS": system activity that leads directly to a desired product, not a preparatory activity needed so productivity can occur. This event has tremendous ramifications. As a simplified example, if you need 1500 IOPS to get a job done in the afforded period of time and your system will only give you 1000, you must either buy more hardware to get that productivity, do less work, or wait. The more I/Os that occur, the more disk head movement, the more energy the site consumes and the more cooling is required.

The problem worsens with scale. The busier a system or a network is, the more fragmentation is being created by "diverted" split I/Os and the more overexpansion and provisioning is needed to get a job done.

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An at-a-glance UI showing how many file fragments were prevented gives the IT manager an important window on system speed and efficiency gains.

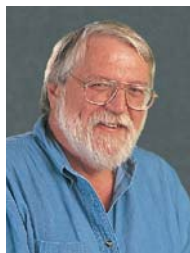
So, what if fragmentation never happened? Benefits like these would become commonplace:

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- Faster file reads and writes
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In Memorium: Bob Chronister, 1942-2009

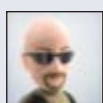


It is with deep sadness that we report Bob Chronister, contributing editor, passed away October 25, 2009. Bob's first article appeared in *Windows NT Magazine* in November 1995. Longtime readers will remember Bob as the author of the popular Ask Dr. Bob, Tricks & Traps column, which he began writing in January 1996.

"By the time I joined the magazine later in 1996, Bob's FAQ was already some of the most popular content we published," recalls Amy Eisenberg, executive editor.

Bob continued contributing FAQs to the magazine until September 2006. We will remember him for his deep technical insights and his keen wit.

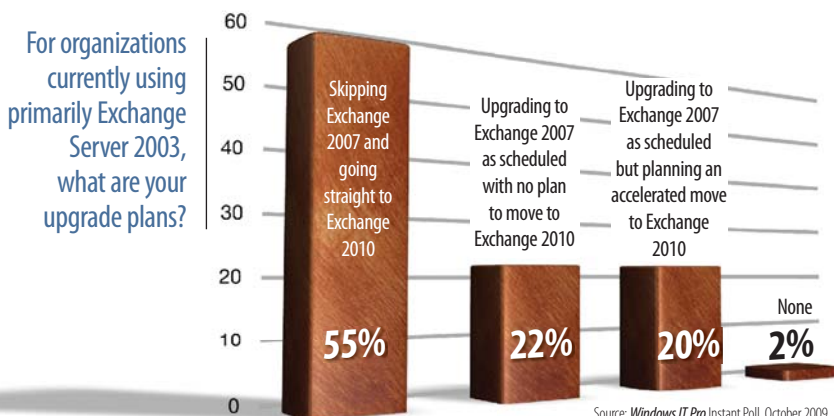
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devinganger Curses! Windows 7 Easy Transfer Wizard won't run on Windows 2008. How am I supposed to upgrade my laptop now?

Monday, September 21, 2009

Instant Poll Results: Exchange Upgrade Plans



From the *Windows IT Pro* Magazine Forum on



Windows 7

I just migrated to Windows 7. So far no issues with my legacy applications. It's fantastic... better than Vista.

—Masialei Masialei

Windows Server 2008 R2

How many of you are running Server 2008 and how quickly do you plan to roll out R2?

—Amy Eisenberg, Executive Editor

We're using Server08 for Hyper-V mostly. As far as upgrading the current systems to R2, no plans yet.

—Nate McAlmond

I upgraded our Active Directory to 2008 in August of 2008 and went fully native by November 2008. We have a number of other new servers that are running 2008 Server as well. We don't plan to push R2 to anything. We will just start ordering it with new servers.

—Robert Jones

I have heard rumors that the R2 version only allows Vista/Win7 clients. Is that true or just a vicious tale?

—Mike Johnson

I spoke with our technical director, Michael Otey, who said the rumor is not true. A handful of features, such as Branch Cache, will work only with Windows 7 clients. But in general, R2 handles other clients.

—Amy Eisenberg



5 Best Practices for Smartphone Support

This paper features real-world examples from US companies on how the benefits of keeping mobile devices functioning without interruption are felt on every level of business: customers receive the service they expect; end-users can work efficiently, enjoying the promised benefits of mobility; IT has its burden lightened, freeing up time for proactive work; and the CFO can look forward to the results of effective mobility and a low TCO.

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Solid-State Drives (SSD) on SQL Server 2008 Show 45 Percent Power Savings

With solid-state drive (SSD) technology, a server can provide the same or a higher degree of performance with significantly less infrastructure and complexity than traditional hard-disk storage options. This white paper offers a comparison of solid-state drives to traditional serial-attached SCSI (SAS) disk usage on SQL Server 2008. The performance comparison shows significant improvement in potential user load and scaling, as well as power savings.

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"The question with Office Web Applications is whether these solutions can replace their respective desktop-based counterparts. At first glance, it appears possible."

What You Need to Know About Office Web Applications

While Microsoft CEO Steve Ballmer claims that free or inexpensive online alternatives to the software giant's dominant Office suite have had little impact in the market, it's pretty clear that Microsoft is taking the threat seriously. Recently, the company began broadly testing web-based versions of several key Office applications, which will be marketed to consumers and businesses as Office Web Applications. Here's what you need to know about Office Web Applications.

What are Office Web Applications?

Office Web Applications are four web-based applications based on classic Microsoft Office applications. Dubbed Word Web Application, Excel Web Application, PowerPoint Web Application, and OneNote Web Application, these solutions provide an Office-like user experience and a good percentage of the functionality one would expect from a traditional Office application. (A fifth related solution, Outlook Web Application, is simply a rebranded version of Outlook Web Access and isn't provided along with the other Office Web Applications.)

The question with Office Web Applications is whether these solutions can replace their respective desktop-based counterparts. At first glance, it appears possible. Each provides an Office 2010-like UI, with ribbon-based controls that replace the menus and toolbars from earlier Office versions. But comparing Office Web Applications with their desktop counterparts, you can see that Office Web Applications don't include as much functionality and are basically stripped down versions of the desktop applications.

Microsoft has specifically designed Office Web Applications to work together with the traditional desktop applications, much in the same way that its Windows Mobile-based Mobile Office applications work. That is, Office Web Applications supplements Microsoft Office but doesn't replace it.

Of particular interest are the collaboration capabilities in Excel Web Application and OneNote Web Application where two or more users can edit and interact in a live, open document simultaneously. I've only tested this with Excel Web Applications so far, but it appears to work as advertised. All of the web applications support easy sharing of documents, however, though that capability appears to be tied to the underlying storage scheme, which will be SharePoint-based for businesses.

Where Office Web Applications excel is in what Microsoft calls document fidelity. If you pass a supported document through any of the web apps, perform editing, and then re-open that document in the desktop application (or vice versa), you should experience no

formatting issues. This was the case in various PowerPoint and Excel data files I tested, though I wasn't able to test a more up-to-date Word Web Application version in time for this article. Microsoft promises similar fidelity with the next version of Mobile Office as well.

One major limitation is that Office Web Applications don't support any form of offline mode—as, say, do Google Docs—so you won't be able to access or edit online documents via the web solutions if your Internet or network connection goes down. This makes the solution less viable as a day-to-day solution, or for those who travel frequently and are often offline.

Also, even if you see the Office Web Applications as a supplemental add-on to Microsoft Office, only Office 2010, due in the first half of 2010, is compatible with documents stored online. Microsoft won't be providing an add-on for users of Office 2007 or older Office versions.

How Will They Be Delivered?

Consumers will access Office Web Applications via the ad-supported Windows Live SkyDrive, which provides 25GB of online storage. Businesses will have two options: Microsoft will make a hosted version of Office Web Applications available via SharePoint Online that will be fee or subscription based and open to all customer types, including volume license customers. Additionally, those who opt into the Office Volume License program will be able to host Office Web Applications on their own SharePoint server internally. In the business scenarios, you will be able to integrate the services into your managed Active Directory infrastructure via a standard SharePoint experience to gain full IT administration, auditing, and document lifecycle control and to perform backup and restore.

Recommendations

By pushing its ribbon UI across all applications in Office 2010 and now to the web in Office Web Applications, Microsoft is creating consistent productivity environments that blur the lines between the PC desktop and the web. At the very least, the online apps should provide a nice supplement to the traditional desktop apps. You might realize some cost savings around keeping certain users on older Office versions and using Office Web Applications where possible. Office Web Applications should be enough to prevent most Microsoft shops from even considering Google Apps or other online alternatives.



InstantDoc ID 102949

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"How do I grab a particular bit of text from an app's output? Setx provides the answer."

Using Setx to Parse a Text File

A little tinkering provides a solution that beats the scripting route

I wanted to create a batch file that would check the status of my Internet connection, so I thought I'd start with a single ping to a particular DNS server on the Internet, redirect that output to a text file, extract the round-trip time in milliseconds, and display the results. But how could I grab a particular bit of text from an app's output? Setx provided the answer.

I introduced Setx in "Enhanced Environment Variable Control with Setx" (InstantDoc ID 102706), but I didn't get a chance to show you its ability to parse text out of input. Setx views a text file as a set of text lines, each of which contains words. It then lets you identify the particular word that you want to extract with two coordinates: the line that it's found in and its word position on that line. Setx counts from zero, not one, so the coordinates to tell Setx to grab the fifth word on the third line would be (4,2).

Setx extracts words out of text files that have regular structures, such as the captured output of a Ping command. Setx needs a text file to work with, so I'll create one by pinging my website once:

```
ping -n 1 www.minasi.com>pr.txt
```

But how do I tell Setx which line and word number identifies the reported round-trip time in milliseconds? I could start counting, of course, but that would be tedious. Instead, I can type

```
setx /f pr.txt /x
```

which causes Setx to dump all the words it can find in the text, along with their coordinates. For example, some of that output looks like

```
(2,0 Reply)(2,1 from)(2,2 70.165.73.5:)(2,3 bytes=32)
(2,4 time=30ms)(2,5 TTL=113)
```

This shows that in the phrase *Reply from 70.165.73.5: bytes=32 time=30ms TTL=113*, Setx found six "words": *Reply*, *from*, *70.165.73.5*, *bytes=32*, *time=30ms*, and *TTL=113*. The one I want, *time=30ms*, is prefixed with 2,4, meaning that it's the fourth word in the third line. Now I've got the information I need to tell Setx to take the captured output of a Ping command, extract the round-trip time, and put it into an environment variable that I'll call *rtt*:

```
setx rtt /f pr.txt /a 2,4
```

It responds

```
Extracted value: time=30ms.
SUCCESS: Specified value was saved.
```

That will get *time=30ms* into the environment variable *rtt*, and that might be all I need, but what if I don't want the *time=* part? Well, as you've probably guessed, Setx's idea of a "word" is a set of characters surrounded by the beginning of a line, a space, or the end of a line. To remove the *30* from *time=30ms*, I could use Setx's /d option to define extra delimiters (i.e., the equals sign and the letter *m*):

```
setx rtt /f pr.txt /d "m","=" /a ...
```

But that /a option needs coordinates, and I've rearranged the whole coordinate system quite a bit. How do I determine where *30* shows up with these new delimiters? I'd use another /x command, but this time with the delimiters in place:

```
setx /f pr.txt /d "m","=" /x
```

That command results in a real mess. To thin the output a bit, I can filter out all the lines except for the ones that contain *30*, like so:

```
setx /f pr.txt /x /d "=", "m"|findstr "30"
```

That shows just two lines:

```
(2,0 Reply)(2,1 fro)(2,2 70.165.73.5:)(2,3 bytes)(2,4 32)
(2,5 ti)(2,6 e)(2,7 30)(2,8 s)(2,9 TTL)(2,10 113)

(7,0 Mini)(7,1 u)(7,2 30)(7,3 s)(7,4 Maxi)(7,5 u)(7,6 30)
(7,7 s)(7,8 Average)(7,9 30)(7,10 s)
```

The *30* I'm looking for is in the first of those two lines—yes, it's a bit uglier to read because Setx has removed the letter *m*—and so the coordinates I want are (2,7).

Now I have a command that will pull out the roundtrip time:

```
setx rtt /f pr.txt /d "m","=" /a 2,7
```

And finally, I get the result

```
Extracted value: 30.
SUCCESS: Specified value was saved.
```

If you're putting together something that winnows out just a few bits of information, and you don't feel like scripting, give Setx a try. It might save you some time.



InstantDoc ID 102918

MARK MINASI (www.minasi.com/gethelp) is a senior contributing editor for *Windows IT Pro*, an MCSE, and the author of 25 books.



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- Heather Clancy,
ZDNet.com

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"ESX Server 4.0 uses a native 64-bit hypervisor that provides significant performance and scalability enhancements over the previous versions."



New Features in vSphere 4.0

Increased scalability, hot add capability, and much more come to VMware's virtualization platform

In last month's Top 10 column, I covered the top ten new features in Microsoft's Virtual Machine Manager 2008 R2 release. In this column, I'll even out that coverage by guiding you through the top ten features of VMware's new vSphere virtualization platform. Most businesses have adopted VMware as their virtualization platform, but they're still using ESX Server 3.5 and the Virtual Infrastructure 3 management platform. Earlier in 2009, VMware released ESX Server 4.0 and the vSphere management platform as the successors to its widely adopted virtualization products. vSphere and ESX Server 4.0 include several important technological enhancements.

- 1 64-bit hypervisor**—Although not everyone realized it, the hypervisor in ESX Server 3.5 was 32-bit. As a result, ESX Server 3.5 couldn't take full advantage of today's more powerful 64-bit hardware platforms. ESX Server 4.0 uses a native 64-bit hypervisor that provides significant performance and scalability enhancements over the previous versions. However, the new hypervisor does require a 64-bit hardware platform.
- 2 Increased VM scalability**—ESX Server 4.0's new 64-bit architecture provides significant increases in scalability. ESX Server 4.0 supports virtual machines (VMs) with up to 255GB of RAM per VM. In addition, the vSphere 4.0 Enterprise Plus edition provides support for up to 8-way virtual SMP per VM. The other editions support up to 4-way virtual SMP. These gains are available on both Windows and Linux guests.
- 3 Hot add CPU, RAM, and virtual disks**—This important enhancement in vSphere 4.0 is designed to create a dynamic IT infrastructure through the ability to add CPU, RAM, and virtual disks to a running VM. The hot add capability lets you dynamically increase your VMs' performance during periods of high resource demands.
- 4 Thin provisioning**—This feature is nothing new to Microsoft virtualization users; vSphere now offers a thin-provisioning feature that's essentially the equivalent of Hyper-V's dynamic disks. Thin provisioning lets you create and provision a Virtual Hard Disk (VHD), but the host uses only the amount of storage that's actually required by the VM rather than using the VHD's allocated size.
- 5 VMware Fault Tolerance**—Fault Tolerance is a new high-availability feature in vSphere 4.0. Fault Tolerance works only between two systems. It uses a technology called vLockstep to provide protection from system failure with absolutely no downtime. VMware's vLockstep technology keeps the RAM and the virtual processors of two VMs in sync at the instruction level.
- 6 vNetwork Distributed Switch**—vSphere 4.0's vNetwork Distributed Switch lets you create and share network configurations between multiple servers. The vNetwork Distributed Switch spans multiple ESX Server hosts, letting you configure and manage virtual networks at the cluster level. It also lets you move network configuration and state with a VM when the VM is live migrated between ESX Server hosts.
- 7 IPv6 support**—Another enhancement in vSphere 4.0 is support for IPv6. Many organizations are planning to move to IPv6. vSphere's IPv6 support lets customers manage vCenter Server and ESX Server hosts in mixed IPv4/IPv6 network environments.
- 8 vApps**—vApps essentially lets you manage as a single entity multiple servers that comprise an n-tiered application. Using vApps, you can combine multiple VMs, their interdependencies, and their resource allocations together as a unit. You can manage all the components of the vApps as a single unit, letting you power off, clone, and deploy all the vApps components in the same operations.
- 9 vSphere Host Update Utility**—The new vSphere Host Update Utility lets you centrally update your ESXi and ESX Server 3.0 and later hosts to ESX Server 4.0. The UI displays the status of the remote updates in real time.
- 10 VMware vShield Zones**—VMware's new vShield Zones let customers enforce network access protection between VMs running in the virtual data center. The vShield Zones feature lets you isolate, bridge, and firewall traffic across vCenter deployments. 

InstantDoc ID 102969

MICHAEL OTEY (motey@windowsitpro.com) is technical director for *Windows IT Pro* and *SQL Server Magazine* and author of *Microsoft SQL Server 2008 New Features* (Osborne/McGraw-Hill).

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Yet Another 10 Free Tools for System Administrators

Audit Active Directory and file servers, detect inactive users, block USB devices, and more – for free

The following freeware tools by Windows IT Pro Community Choice Awards finalist NetWrix Corporation can save you a lot of time and make your network more efficient – at absolutely no cost. Some of these tools have advanced commercial versions with additional features, but none of them will expire and stop working when you urgently need them.

10. Disk Space Monitor (MS TechNet Magazine Sep'09: www.tinyurl.com/mngae7y) — Even with today's terabyte-large hard drives, server disk space tends to run out quickly and unexpectedly. This simple monitoring tool will send you daily summary reports regarding all servers that are running low on disk space, below the configurable threshold. Download link: www.tinyurl.com/ygccuja

9. Bulk Password Reset (reviewed by SoftPedia: www.tinyurl.com/bvo23aq) – While most companies have strong password policies for their employees, one critical issue is still neglected: local Administrator passwords on all servers are usually managed in a “set and forget” fashion, sometimes using some “well-known” passwords, opening a major surface for security attacks. The Bulk Password Reset tool quickly resets local account passwords on all servers at once, making them more secure. Download link: www.tinyurl.com/yb9e9b3

8. Windows Service Monitor (WindowsReference.com: www.tinyurl.com/pqb37aw) — This very simple monitoring tool alerts you when some Windows service accidentally stops on one of your servers. The tool also detects services that fail to start at boot time, which sometimes happens, for example, with Exchange Server. Download link: www.tinyurl.com/w52qeoc

7. VMware Change Reporter (TechTarget/SearchVirtualDesktop: www.tinyurl.com/hg93ekj) — If you don't know what is being changed by your colleagues in the VMware infrastructure, it's very easy to get lost and miss changes that can affect the things for which you are responsible. This tool tracks and reports configuration changes in VMware Virtual Center settings and permissions. Download link: www.tinyurl.com/kf7upu2

6. Active Directory Object Restore Wizard (4sysops.com: www.tinyurl.com/tfx79jn) — This tool can save the day if someone accidentally (or intentionally) deleted a bunch of Active Directory objects. It provides granular object-level and even attribute-level restore capabilities to quickly rollback unwanted changes (e.g., mistakenly deleted users, modified group memberships, etc). Download link: www.tinyurl.com/yjxge99

5. File Server Change Reporter (4sysops.com: www.tinyurl.com/kfa35w8) — This tool continues the line of auditing tools; this one for file servers. File Server Change Reporter detects changes in files, folders, permissions, tracks deleted, and newly-created files, and sends daily summary reports. This is a very useful tool to detect mistakenly-deleted files and recover from backup or to see if someone changes some important files. Download link: www.tinyurl.com/yzztwp9

4. Inactive Users Tracker (MS TechNet Magazine May'08: www.tinyurl.com/fst19nj) — This feature tracks down inactive user accounts (e.g., terminated employees) so you can easily disable them, or even remove them entirely, to eliminate potential security holes. The tool sends reports on a regular schedule, showing what accounts have been inactive for a configurable period of time (e.g., 2 months). Download link: www.tinyurl.com/yhvtzhj

3. Password Expiration Notifier (Redmond Magazine Feb'09, 4sysops: www.tinyurl.com/yr1w97f) — This tool will automatically remind users to change passwords before they expire to keep you safe from password reset calls. It works nicely for users who don't log on interactively and, thus, never receive standard password change reminders at log on time (e.g., VPN and OWA users). Download: www.tinyurl.com/yhu4fs5

2. USB Blocker (Windows IT Pro Nov'09) — Users bring tons of consumer devices: flash drives, MP3 players, cell phones, etc., into the office and this aptly-named tool can block them with a couple of mouse clicks to prevent the spread of a virus and to restrict the take-out of confidential information. The product is integrated with Active Directory and is very easy to use. Download link: www.tinyurl.com/yj3fuxx

1. Active Directory Change Reporter (Windows IT Pro Sep'09: InstantDoc ID 102446, Windows IT Pro Jan'09: InstantDoc ID 100593, TechTarget: www.tinyurl.com/kqkq28a) — This is a simple auditing tool to keep tabs on what's going on inside Active Directory. The tool tracks changes to users, groups, OUs, and other types of AD objects, and sends summary reports with full lists of what was changed and how it was changed. In addition, it has a nice “rollback” feature that helps rollback unwanted changes (including deletions) very quickly. Download link: www.tinyurl.com/ygmxxm8



Morales

WHAT WOULD MICROSOFT SUPPORT DO?

"One of the keys to ensuring a short support call is to provide a way for support engineers to reproduce the problem in house."

Disk2vhd: The Windows Troubleshooter's New Best Friend

A new, free P2V tool makes some issues easier to reproduce and resolve

Support calls are an inevitable part of a Windows IT professional's life, but that doesn't mean all support calls have to be excessively time-consuming. There are many things you can do to help shorten the time spent on a support call—by explaining the problem, collecting data, or performing a number of troubleshooting steps.

One of the keys to ensuring a short call to Microsoft support is to provide a way for support engineers to reproduce the problem in house. Doing so enables our debug team to quickly and efficiently dig in and resolve the issue, usually in a matter of hours or even minutes.

But helping Microsoft support troubleshoot your problem more efficiently isn't usually merely a matter of sending the support engineer a list of steps to reproduce the problem. This is because often it's unclear how or when the OS got into the problem state to begin with, so having a list of repro steps is useless for someone trying to reproduce the problem on a cleanly installed OS. In this column, I'll tell you about a new Windows Sysinternals utility, Disk2vhd, which can help with this aspect of Windows system troubleshooting.

Disk2vhd Use Scenarios

Disk2vhd (disk2vhd.exe) is another great utility from Mark Russinovich and Bryce Cogswell, which you can download at technet.microsoft.com/en-us/sysinternals/ee656415.aspx. Disk2vhd will convert a running physical machine into a Virtual Hard Disk (VHD) in Microsoft's Virtual Machine (VM) disk format. Having the system in a .vhd format allows Microsoft support engineers to quickly load up the image into either Hyper-V or Microsoft Virtual PC to reproduce the problem. Once the problem is reproduced, our debug team can dig into the issue and usually find root cause within a matter of hours. Of course, this utility has other obvious uses. You could use it for server consolidation or other scenarios where you may want to convert a physical system to a VM.

For instance, by having an image of the customer's system, an engineer on my team solved a three-month-old support case in three hours. The customer implemented a customized security descriptor on the Application Event log, causing the Easy Print functionality to break on Windows Server 2008. Who would have expected that a permission change made on the Application log would affect printing?

Prior to receiving the customer's image, our team discussed a lot of theories about the problem's cause and took steps to resolve the problem, but to no avail. Once we had the customer's image, the engineer quickly resolved the problem, which, as it turned out, was that the custom security descriptor removed the local system account's write access to the Application log. The Easy Print process has to be able to register (i.e., write) an Event Source ID with the Application Event log, and it does so through the local system account.

Another type of issue that we resolved by using a customer's image was a problem where the association between .lnk files and

the executables was broken, so if you tried to open the .lnk file via the common Open File Dialog box, the associated executable would not launch. Within three hours of receiving the customer's image, we were able to reproduce and debug the problem, which turned out to be caused by an unsupported registry change the customer made several months earlier to remove the little arrow associated with shortcut links.

System Center Virtual Machine Manager (SCVMM) also provides the ability to create physical to virtual (P2V) images. (You can download an evaluation edition of SCVMM at www.microsoft.com/downloads/details.aspx?FamilyID=292de23c-845c-4d08-8d65-b4b8cbc8397b&displaylang=en.)

However, SCVMM is rather large in size (more than 1GB), and its installation and configuration is far more involved than Disk2vhd's. If you only require the ability to convert a physical system to a VM, though, Disk2vhd is the tool of choice.

Having the system in a .vhd format lets Microsoft support engineers load the image into Hyper-V or Microsoft Virtual PC to reproduce the problem.

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Learning Path

Learn more about Disk2vhd:

"Disk2Vhd, the Physical to Virtual Converter," InstantDoc ID 102940

Disk2vhd v1.0, technet.microsoft.com/en-us/sysinternals/ee656415.aspx

More Windows troubleshooting articles in this series:

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Bryce Cogswell for creating another valuable and easy-to-use tool that will dramatically help resolve issues much faster with far fewer headaches than other virtualization tools. Also special thanks to Venkatesh Ganga, a senior Microsoft escalation engineer, who contributed significantly to this article.

InstantDoc ID 102980

MICHAEL MORALES (morales@microsoft.com) is a senior escalation engineer for Microsoft's Global Escalation Services team. He specializes in advanced Windows debugging and performance-related issues. For information about Windows debugging, visit blogs.msdn.com/ntdebugging.

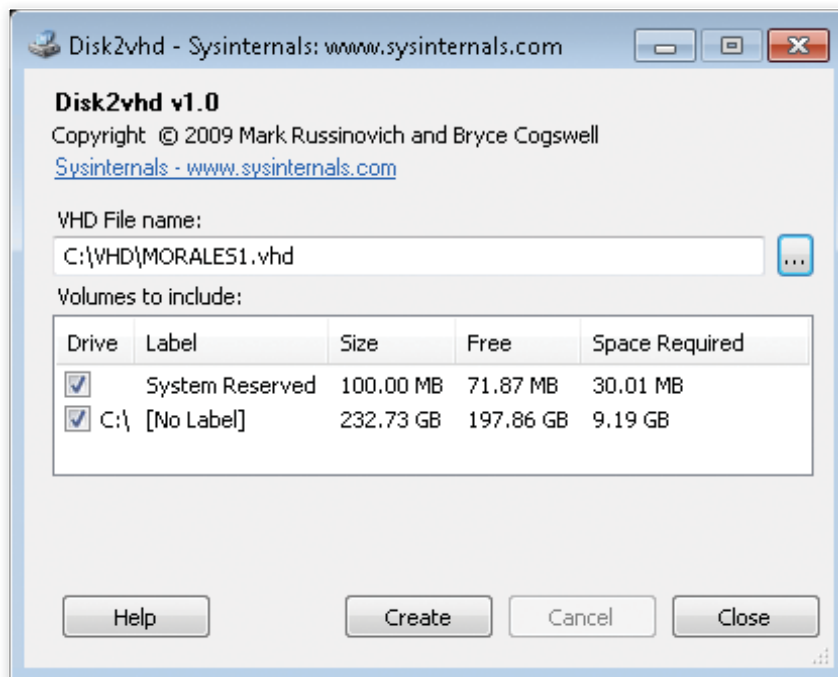


Figure 1: Disk2vhd startup UI

It's an easy-to-use utility and a must-have for any administrator who uses Microsoft support. Disk2vhd can save you time, money, and headaches if you have the type of problem that can be reproduced in a VM and outside of your corporate network. What I like about Disk2vhd from a time-saving perspective is that the .vhd image is natively created for Hyper-V or Virtual PC, which lets me as a Microsoft support engineer quickly move past the configuration and setup phase and right into the reproduction and debugging phase—thus saving time and providing a quicker resolution for the customer.

Using Disk2vhd

Disk2vhd's UI is simple and straightforward, as Figure 1 shows. You simply check the boxes for the volumes that you want included in the image. Then you type in where you want the .vhd file to be stored, which can actually be on the same image that's being converted. So if you're converting the C drive, you can actually store the .vhd on the C drive. However, as Mark Russinovich points out on the Disk2vhd website, you'll experience faster conversion times if the file is stored on a disk other than the one being actively converted.

On my Dell Precision 380 with 4GB of RAM running Windows 7, Disk2vhd took

approximately 10 minutes to convert the image to a .vhd file. Within a few moments, I was able to successfully load the image into Hyper-V, allowing me to interact with the image just as if I were on the physical machine itself. Had this been a real issue I was trying to solve, I could have downloaded the .vhd, loaded it up in Hyper-V, and started debugging in a few moments—circumventing the usual back and forth that can occur when trying to resolve problems on a remote system.

Try It Out

So, can you create an image for every type of issue and expect it to be resolved in a few hours? No is the simple answer, but that's because not every issue can be reproduced even if you have an image of the system. Before you send an image to Microsoft support, first test whether the problem can be reproduced. Many issues can be reproduced either right away or with a little configuration. The best way to determine whether your issue is a candidate for imaging is to try creating an image of your system by using the Disk2vhd utility, then attempt to reproduce the problem on an isolated network—which is essentially what we would do once the image was transferred to Microsoft support.

Special thanks to Mark Russinovich and

TOOL TIME

windowsitpro.com

Connect to Remote Machines with Royal TS

If you manage a lot of remote servers, try Royal TS from Code4ward (www.code4ward.net/main). This tool lets you connect to remote Windows machines using RDP. Although Royal TS has now become shareware, the older versions (version 1.5.1 and earlier) are still free.

Royal TS is a great lightweight replacement for the Microsoft Management Console (MMC) Remote Desktop snap-in. Some of the great time-saving features are the ability to:

- Set up automatic logons
- Add new remote connections as quick as you can type in the name
- Save your list of connections and move them to another machine
- Create and sort folders easily
- Connect to console by right-clicking

You can find the older versions of Royal TS by going to Royal TS's download page (www.code4ward.net/main/RoyalTS/Download.aspx) and clicking the link in the "Download Statistics and Previous Versions" section at the bottom of the page.

Please be advised that McAfee SiteAdvisor gives a warning rating to the Code4ward.com site because: "When we tested this site we found links to SoftSea.com, which we found breaches browser security on our test PC." However, the downloads for Royal TS aren't hosted on SoftSea.com and there is no reason to go to that site to obtain the software.

—Dennis Wynne, Windows systems administrator and desktop support specialist

InstantDoc ID 102914



- Royal TS
- NTFS Inheritance

- PowerShell
- Microsoft Updates
- Network Connections

READER TO READER

NTFS Inheritance Rule Change

Until recently, NTFS permissions have followed these inheritance rules:

1. If a file or folder is copied to some other location, it will inherit the new location's NTFS permissions.
2. If a file or folder is moved to some other location on a different disk drive, it will inherit the new location's NTFS permissions.
3. If a file or folder is moved to some other location on the same disk drive, it will retain the original location's NTFS permissions.

One of the NTFS inheritance rules changed in Windows 7, Windows Server 2008, and Windows Vista. Now if you move a file or folder, it will inherit

the new location's NTFS permissions, even if the new location is on the same disk drive. This is a radical shift that you need to take into account when you're moving files. You can find a reference to this change in the Notes section in the Microsoft article "Inherited permissions are not automatically updated when you move folders" (support.microsoft.com/kb/320246).

—Murat Yildirimoglu, MCSE and MCT

InstantDoc ID 102924

Retrieve Information from Open Browsing Sessions

I occasionally want to hang on to some URLs that I've retrieved in a Microsoft Internet Explorer (IE) browsing session for

later reference. Although you certainly can save and re-open tab sets of URLs on systems running IE 7.0 and later, you don't have any portability and you certainly can't save the information as a reference to browse through later on. I wrote a couple of PowerShell scripts to solve these browsing problems.

The first script, Get-IEUrl.ps1, lets you quickly retrieve information about the current browsing session for reuse later on. If you run Get-IEUrl.ps1 with no arguments, you'll get a list of the URLs for all the open web pages, as Figure 1, page 26, shows. You can copy and paste these URLs for use elsewhere, or even send them to a file using a command such as

```
Get-IEUrl | Set-Content sites.txt
```

What's handy about saving the URLs to a file is that you can then use the second script, Start-IEUrl.ps1, to pull up the set of web pages. To do this, you'd use a command such as

```
Get-Content sites.txt | Start-IEUrl
```

Reviving the URLs this way doesn't necessarily give you what you had originally. Each URL will be in a separate IE window, even if you have tabbed browsing enabled. Still, it gets you back to the original web pages.

Get-IEUrl.ps1 has three optional arguments: -Location, -Content, and -Full. If you use the -Location argument like this

```
Get-IEUrl -Location
```

you'll get a list of the web pages' titles along with their URLs, which is useful if you want to save the items as references. Figure 2, page 26, shows some sample output that's been sorted with the Format-List cmdlet.



Murat Yildirimoglu

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■ READER TO READER

If you use the `-Content` argument like this

```
Get-IEUrl -Content
```

`Get-IEUrl.ps1` will output the title, URL, and content (text only) of each open web page. You can view this output onscreen, but I included this argument so I'd have an easy way to get information from web pages into a text file or printout for use offline.

Finally, if you use the `-Full` switch in a command such as

```
$ies = Get-IEUrl -Full
```

`Get-IEUrl.ps1` returns the IE objects for all open web pages and stores them in the `$ies` variable. This lets you use the script as a starting point for performing other tasks in IE. What you can do depends to a great extent on your knowledge of IE. Let's look at a couple of simple examples.

The following code uses the IE objects stored in the `$ies` variable to refresh the open web pages every 60 seconds until you issue a break command (Ctrl+C in PowerShell):

```
while($true){  
    sleep 60; $ies |  
    %{$_.Refresh()}}
```

If you want to print all the IE web pages captured in `$ies`, you can use the command

```
$ies | %{$_.ExecWB(6,1)}
```

Note that a Print dialog box will pop up for each web



Alex K.
Angelopoulos

page. You can also bring up the Save As dialog box for each web page in `$ies` using the snippet

```
$ies | %{$_.ExecWB(4,1)}
```

`Get-IEUrl.ps1` and `Start-IEUrl.ps1` exploit only a couple of the capabilities of the IE automation model. If you're interested in exploring more things you can do

with IE from PowerShell, try using `Get-IEUrl.ps1` with the `-Full` argument, then use the `Get-Member` cmdlet on the returned IE instances. You can get more information about the IE object model from MSDN's "The Internet Explorer Scripting Object Model" web page (msdn.microsoft.com/en-us/library/ms970457.aspx).

—Alex K. Angelopoulos, IT consultant

InstantDoc ID 102917

Get Updates on Microsoft Updates

I created a script, `WinUpdateCheck.vbs`, that you can use to generate a report that details the number of Microsoft updates installed and the date of the most recently installed update for every Windows XP machine on your network. This information can be very useful in identifying machines

that have been compromised with malware that prevents the installation of Microsoft updates (e.g., Conficker worm). It also provides a simple way to monitor Microsoft update installations throughout your network.

Here are the steps to get `WinUpdateCheck.vbs` working in your environment:

1. Download `WinUpdateCheck.vbs` from the *Windows IT Pro* website. Go to www.windowsitpro.com, enter 102913 in the InstantDoc ID box, click Go, then click the *Download the Code Here* button.
2. Create a text file that lists the name of every Windows XP host on your network. Each host name should be on a separate line.
3. In the code that Listing 1 shows, modify the `PCLIST` constant to reflect the directory path and name of the text file created in step 2.
4. Modify the `PATH` constant to reflect the directory location of where you want the results to be logged.

`WinUpdateCheck.vbs` logs the results in a comma-separated value (CSV) file named `Update-Log.csv`. (If you run the script more than once, the subsequent runs' results are appended to the existing CSV file.) At the end, the script attempts to open the CSV

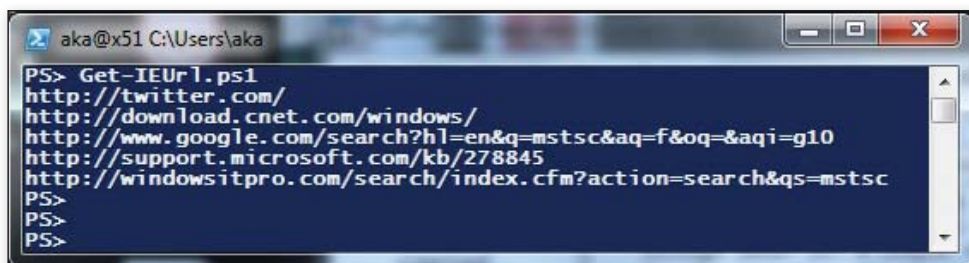


Figure 1: Getting the URLs for the web pages in an open browsing session

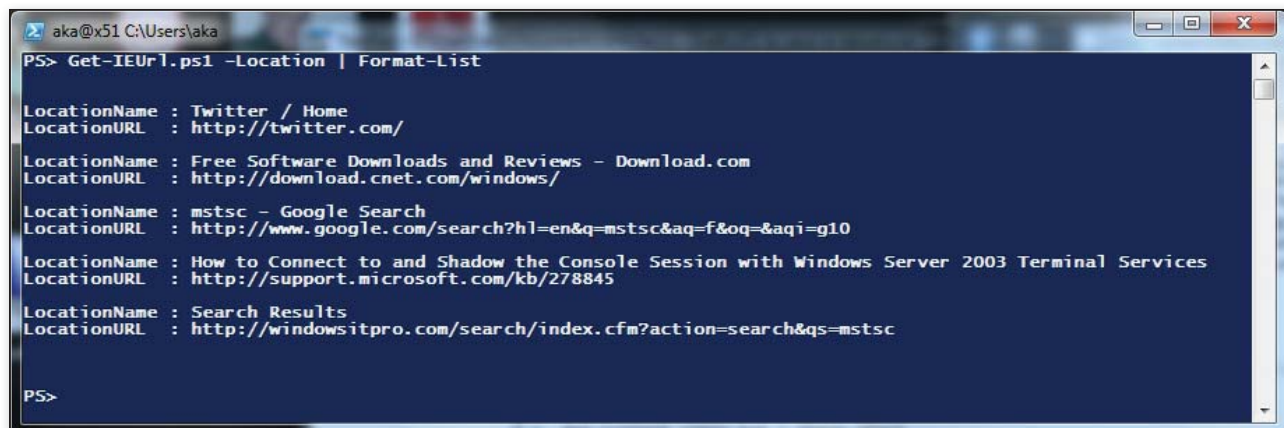


Figure 2: Getting URLs and page titles for the web pages in an open browsing session

file in Microsoft Excel. If you don't have Excel installed on the machine from which you're running the script, the results will still be logged in the CSV file. The file just won't open at the end of the script's run.

Note that WinUpdateCheck.vbs assumes the machines being inspected have Windows installed in the C:\Windows directory. If your machines have Windows installed in a different location, you'll need to change %c:\Windows to the appropriate directory in the script's UpdateLog subroutine.

WinUpdateCheck.vbs takes roughly 10 minutes per 100 machines to run, so if you have 500 machines it will take about 50 minutes to complete. (It might be slower or faster, depending on your network infrastructure.)

—Brandon Jones, systems administrator, The W.A. Franke College of Business, Northern Arizona University
InstantDoc ID 102913

Monitor Network Connections with Pingmon

The staff at a remote location in my company had reported frequent network outages, so I had to come up with a way to monitor their network connection. I wanted to see how often the connection went down and how long it took to come back up. Rather than spending money on a commercial program or digging through huge ping logs, I pulled together a few free utilities and wrote a .bat script named Pingmon.

Pingmon is simple in concept: It watches an address that's either responding or not, and if the state changes, the script generates an email and a log entry. The log shows when the connection went up or down. When a connection goes from down to up, the log also shows how long it was down.

The syntax to use Pingmon is straightforward:

```
pingmon <computername> <frequency>
<email-address> <log-file>
[<comment>]
```

where

- *computername* is the name or IP address of the device you want to monitor

Listing 1: Code to Modify in WinUpdateCheck.vbs

```
' Replace \\PATH\HOSTNAMES.TXT with the path and
' name of the file containing your list of host names.
Const PCLIST = "\\PATH\HOSTNAMES.TXT"

' Replace \\PATH\ with the location of the directory where
' you want the results to be logged.
Const PATH = "\\PATH\"

Const FORAPPENDING = 8
Const FORREADING = 1
Const OPENASASCII = 0
Const FAILIFNOTEXIST = 0
```

- *frequency* is the number of seconds to wait between ping attempts
- *email-address* is where you want to receive email notifications
- *log-file* is the name of the file in which you want to log all state changes
- *comment* is an optional one-word description of what you're monitoring

(Although this command wraps here, you'd enter it all on one line. The same holds true for the sample command that follows.)

If you don't want to receive the email notifications or have a log file, you can just use a period for that param-

eter. You might not want email notifications if you expect a device to go up and down frequently and you just need to keep track of the device's state. You might not want to have a log file if you need to take some action as soon as a device becomes available.

Pingmon uses three utilities: date.exe, SleepX, and Blat. Date.exe is a port of the UNIX date command. It provides a UNIX-type date so that the script can calculate how long a circuit is down. Date.exe is one of many UNIX tools in the UnxUtils .zip file, which you can download from unxutils.sourceforge.net.

The script uses SleepX to create a pause between ping attempts. SleepX is part of the Shell Scripting Toolkit, which is collection of Win32 command-line utilities you can use in cmd.exe shell scripts. You can download the Shell Scripting Toolkit from www.westmesatech.com/sst.html.

Pingmon uses Blat to send the email notifications. Blat is an extremely versatile

command-line mailer that's easy to set up and use. However, I recommend that you install it as follows: Download the utility from www.blat.net, and copy the blat.exe file into a library in your path. Then, at a command prompt, run

```
blat.exe -install
<your.mailserver.com>
<you@yourdomain.com>
```

substituting *your.mailserver.com* and *you@yourdomain.com* with the name of your SMTP email server and your email address, respectively. Installing it this way saves these values in your registry so you don't have to pass them as parameters every time you run Blat.

Besides using Pingmon to troubleshoot the remote location's network outages, my colleagues and I have found many other uses for it. We've used it to watch several devices at remote locations to determine what switches are dropping out. To monitor a plant's network, we ran several Pingmon scripts, had them log to the same file, and set up a scheduled task to email the log to us every day. We also used the script to monitor servers awaiting reboots and monitor circuit uptime in international locations. Whatever you're watching, Pingmon throws out the fluff so you only have to look at interesting events.

You can download Pingmon, which I wrote for use on Windows NT 4.0 and later, from the *Windows IT Pro* website. (Go

to www.windowsitpro.com, enter 102911 in the InstantDoc ID box, click Go, then click the *Download the Code Here* button.)

You don't need to customize the code at all, but you do need to install the date.exe, SleepX, and Blat utilities to use Pingmon. Depending on what you plan to use Pingmon for, you might want to enhance it. For example, you could add an option to write the log entries in a database

or have it run Traceroute (tracert.exe) when a device goes down.

—Bill Aycock, network administrator, International Textile Group

InstantDoc ID 102911

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INSTRUCTOR:



John Savill is the author of the popular FAQ for Windows and a contributing editor to Windows IT Pro. He is an advisory architect for EMC's Microsoft consulting practice. He's an MCITP: Enterprise Administrator for Windows Server 2008 and a 10-time MVP. His latest book is The Complete Guide to Windows Server 2008 (Addison-Wesley).

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ANSWERS TO YOUR QUESTIONS

Q: How can I enable encryption in Outlook 2003?

A: The ability to encrypt MAPI connections in Microsoft Office Outlook 2003 isn't enabled by default as it is in Office Outlook 2007. If you want to enable encryption of MAPI connectivity between Outlook 2003 and Microsoft Exchange Server 2003 and higher, you need to make a change to Outlook 2003. This change is a registry value which can be implemented through Group Policy (Policy template file OUTLK11.ADM) or the Custom Installation Wizard (CIW) for Microsoft Office 2003.

You can also make the registry change manually. If it doesn't exist, add the EnableRPCEncryption value of either 1 for enabled or 0 for not.

```
[HKEY_CURRENT_USER\Software\Microsoft\Office\11.0\Outlook\RPC]
```

```
"EnableRPCEncryption"=dword:1
```

RPC encryption isn't the same as encrypting individual messages. RPC encryption only encrypts the data stream between Outlook and Exchange for MAPI con-

nections. It isn't specific to a single email message.

This is an important setting if you are moving to Exchange Server 2010, which requires encryption from its MAPI Outlook clients. Exchange Server 2010 will support Outlook clients back to Outlook 2003 SP2 for MAPI connectivity. However, for Outlook 2003, encryption between Outlook and Exchange must be enabled on the client. You will need Outlook 2003 SP2 to connect to Exchange 2010.

—William Lefkovic
InstantDoc ID 102684

Q: I want to use Identity Lifecycle Manager (ILM) to synchronize passwords between two forests. What trusts do I need?

A: The trust relationships required depend on the configuration. To synchronize passwords between different forests, you have two critical components:

- Password Change Notification Service (PCNS)—This is responsible for pushing password changes from the Active Directory to an identity store/synchronization engine such as ILM. PCNS is installed on the domain controllers in the domain where password changes need to be captured. There is an Active Directory (AD) schema change required for PCNS to function
- The Synchronization Engine—this actually acts on the new passwords and updates other objects. In this case, ILM.

PCNS and ILM must be in the same forest or have a two-way Kerberos forest trust

Q: If I unlock a BitLocker protected USB device, is it only unprotected for the current user?

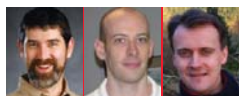
A: BitLocker is a volume-level encryption technology. When the password for a BitLocker protected USB device is entered, the volume becomes unprotected for the OS instance. If the user who unlocked the device doesn't disconnect the device before logging off, or if another user logs onto the same machine using Switch User, other users will still have access to the USB device's content.

In addition, any user who is an administrator has remote access to the USB device, so those users would also be able to access the data once the USB device is unlocked by the local user.

—John Savill
InstantDoc ID 102857

between them, but no trust is needed between the ILM instance and the target forest where you're updating passwords. All you need in ILM is a connector to the target forest and to match up the user in the source forest with the user in the target forest in the metaverse via a join rule (so the password is mapped to the right user). For example, both accounts may have the same sAMAccountName. This scenario allows you to have one forest, Forest A, where users change their passwords, and have ILM installed with PCNS in Forest A. The ILM can then project the updated passwords onto matching users in Forest B without the need for a trust.

Unfortunately, the above scenario is not the predominant one. It's more common to have multiple source forests where users change their passwords, and you want those passwords to be updated into a central AD forest, which is where you'd like to have ILM installed. For this to work, you need forest trusts between the target forest and all the source forests so PCNS can communicate with ILM in the target



William Lefkovic | william@mojavemediagroup.com
John Savill | jsavill@windowsitpro.com
Jan De Clercq | jan.declercq@hp.com

forest. You must use a forest trust to enable the Kerberos mutual authentication to allow ILM to accept the request from a host in a remote forest.

If you want to have two (or more) forests replicating passwords with each other in both directions (so users can change their password in either forest), custom configuration (and possibly coding) is required. By default, if each forest notifies the other forest of a password change when the forest receives the notification, each would make the change then notify the other forest of a password change, and an infinite loop would occur. In most implementations, you need one of the forests to be authoritative for password changes. Microsoft offers a step-by-step guide to help you configure password synchronization at its site, at tinyurl.com/yk6l4za.

The short answer to the question is that you require a forest trust between the forests running PCNS and the forest that runs ILM.

—John Savill
InstantDoc ID 102896

Q: Does Windows include a mechanism to show failed logon information to the user at logon time?

A: Yes, Windows includes such a mechanism, starting with Windows Server 2008 and Windows Vista. You might be interested so that you can let your users see if someone has been trying to use their accounts and guess their passwords since they last successfully logged on to Windows.

After a user successfully logs on to Windows, the mechanism will display the last successful logon time, the last failed logon time, and the number of failed logon

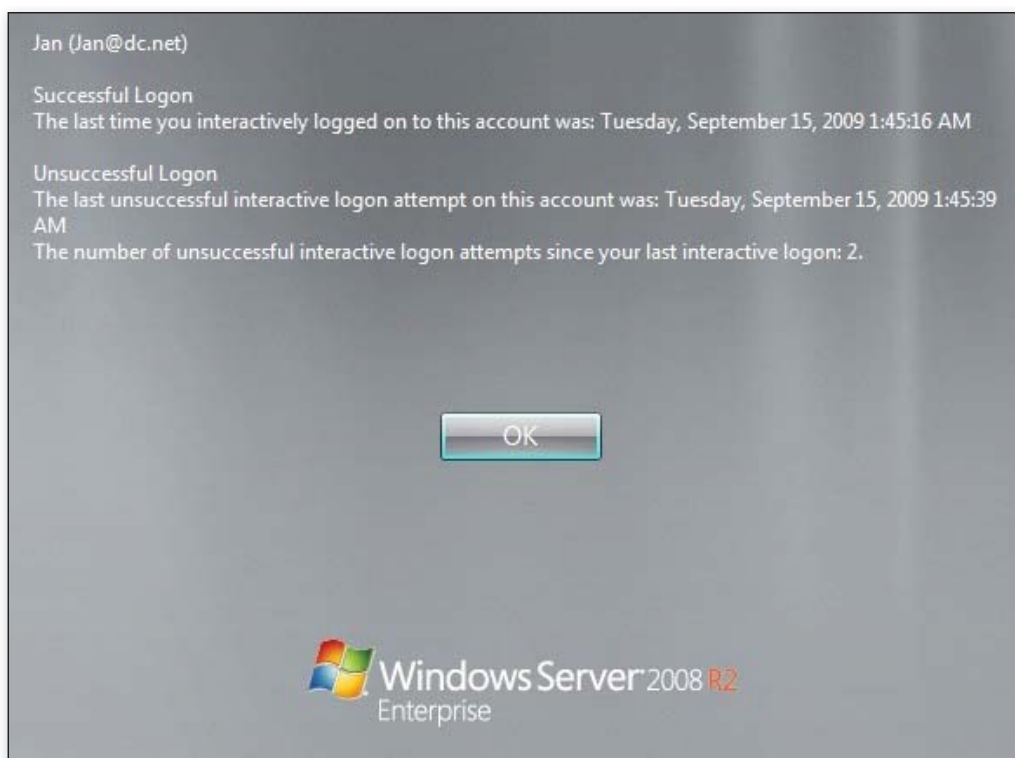


Figure 1: Logon information display

attempts since the last successful logon time, as shown in Figure 1. Your users must acknowledge this information before they can proceed and access the Windows desktop.

Behind this feature is a new set of Active Directory (AD) attributes that are replicated between all the Domain Controllers (DCs) of a domain. These attributes allow the OS to determine the last successful and failed logons. Only Windows 7, Vista, and Server 2008 can use the feature—other Windows OSs ignore it. This feature is only available after you've increased the Domain Functional Level (DFL) to Windows Server 2008, so only Server 2008 DCs can exist in your AD domain—none from earlier OSs.

To enable this new mechanism, you must explicitly allow Windows to report the logon information and to write it to AD at logon time. You can allow both actions using a set of new Group Policy Object (GPO) settings.

To allow Windows to write the information to AD at logon, a GPO affecting your DC configuration (for example, the Default Domain Controllers GPO) must have the following setting enabled:

Computer Configuration\Administrative

Templates\Windows Components\Windows Logon Options\Display information about previous logons during user logon

To allow Windows to report the information at logon, a GPO affecting your server and client configuration (for example, the Default Domain Policy) must have the following setting enabled:

Computer Configuration\Administrative Templates\Windows Components\Windows Logon Options\Display information about previous logons during user logon

One last warning: if you enable these settings for domains that are Windows Server 2003, Windows 2000 native, or Windows 2000 mixed functional level, a warning message will appear at logon time. The message will inform your users that Windows could not retrieve the logon information and they will not be able to log on. In other words, you should never enable these GPO settings if your domain is not at the Server 2008 DFL.

—Jan De Clercq
InstantDoc ID 102843

We chose—and you chose!—
from an impressive crowd of
unique offerings

Windows IT Pro

Editors' Best and Community Choice Awards

by the Windows IT Pro editors



Your Top 10 Favorite Things about Working in IT

10. "Every day brings a new challenge."
9. "It's quite fulfilling when I can figure out tough problems for people."
8. "No one else knows what the hell I'm talking about, and I appear smarter than everyone else."
7. "I get to play with cool, shiny toys and get paid for it."
6. "UNLIMITED POWER! MUHAHAHA!"
5. "Free soda."
4. "People need me."
3. "I get a comfy chair."
2. "The money."
1. "The girls."

Your Top 10 Least Favorite Things about Working in IT

10. "Everybody thinks I can fix any problem with two mouse clicks."
9. "The constant technology evolution: I'm outdated as soon as I get something in place."
8. "Balancing home life and work life."
7. "Failing eyesight."
6. "The terrible hours: Everyone from the CEO to the village dog depends on me and will call me at 2 A.M. when their email is taking longer than five minutes to arrive."
5. "Everyone I know wants me to fix their computer."
4. "The money."
3. "If I fail, everything fails."
2. "The smell."
1. "End users."

Picking a favorite product from an impressive crowd of competitive offerings is never an easy task, and such was the case with our Editors' Best and Community Choice awards this year. The former award program highlights products that *Windows IT Pro* editors and contributors believe are worthy of recognition, whereas the latter program turned that process over to you, our readers.

Our Community Choice awards allowed readers to decide which products and services were chosen for acclaim and recognition. Rather than presenting a predefined list of products and services that limited your selection to choices our editorial team had already made, this year we decided to open up the process to everyone and let you determine the products and services that were worthy of inclusion in our final voting phase. We also encouraged IT pros to submit comments about why they selected the products they did, so you'll see lots of insightful comments and real-world wisdom from IT pros about their favorite products on the pages that follow.

Unlike last year—when we treated both award programs as separate entities—we decided to merge the award programs this year. We've listed the top three Editors' Best products in each category directly adjacent to our Community Choice winners. Sometimes our editors and readers agreed on what products and services were best in a given category, and sometimes they didn't. Yet regardless of whether these winners were picked by editors or readers, one thing is certain: All these awards recognize products and services that are considered the best of the best in their respective categories.

By presenting our Community Choice and Editors' Best award picks next to each other this year, we're hoping we'll encourage some dialog about the selections that were made. Do you agree with the choices our editors made? Or do the picks that our readers made carry more weight? Please let us know what you think by emailing us your comments, or by visiting our online forums and writing a post or two.

Best Active Directory and Group Policy Product

Editors' Best

GOLD:

GPEXpert Group Policy Automation Engine 2.0 • SDM Software • www.sdmsoftware.com

SILVER:

Privilege Manager • BeyondTrust • pm.beyondtrust.com

BRONZE:

GroupID Suite • Imanami • www.imanami.com

Community Choice

GOLD:

ScriptLogic Active Administrator • ScriptLogic • www.scriptlogic.com

SILVER:

Group Policy Manager • Quest Software • www.quest.com

BRONZE:

Active Directory Change Reporter • NetWrix • www.netwrix.com

"SDM Software's GPEXpert Group Policy Automation Engine 2.0 helps the Group Policy-challenged manage Group Policy as though they were Group Policy experts."—*Caroline Marwitz, associate editor, Windows IT Pro*

"SDM products allow powerful GPO management. SDM Software clearly shows its leadership with innovative solutions that no one else provides. The company led the way in automation of Group Policy management with its Group Policy Automation Engine and free PowerShell GPMC cmdlets—which I personally value highly. These technologies were introduced by SDM long before Microsoft provided limited functionality in Windows 7."—*Guido Grillenmeier, contributor, Windows IT Pro*

Quotes from the Windows IT Pro community about ScriptLogic's Active Administrator ...

"I believe it's the best AD resource on the market and priced perfectly."

"Wonderfully comprehensive tool set for managing AD."

"Lets you recover that OU and save embarrassment and time."



Best Auditing and Compliance Product

Editors' Best

GOLD:

Control Compliance Suite • Symantec • www.symantec.com

SILVER:

ChangeAuditor • Quest Software • www.quest.com

BRONZE:

Active Directory Change Reporter • NetWrix • www.netwrix.com

"Keeping your IT infrastructure in compliance with corporate governance rules and regulations can be an arduous task. It's expensive and is aimed at larger enterprises. Symantec's Control Compliance Suite can help ease the compliance burden immensely."—*Jeff James, Windows IT Pro*

"It's a big product to cover a big problem, but Symantec's Control Compliance Suite gives you many options for deployment. It has broad platform support for multi-OS environments, runs agentless or agent-based, and features many out-of-the-box policies for common regulations, such as SOX and PCI, as well as letting you define policies specific to your environment."—*B. K. Winstead, associate editor, Windows IT Pro*

Community Choice

GOLD:

Control Compliance Suite • Symantec • www.symantec.com

SILVER:

GFI EventsManager • GFI • www.gfi.com

BRONZE:

ChangeAuditor • Quest Software • www.quest.com

Quotes from the Windows IT Pro community about Symantec's Control Compliance Suite ...

"Extremely comprehensive."

"Control Compliance Suite gives me really great reports about my organization's compliance with internal and external standards."

"I can't imagine anything better."

Best Antivirus and Anti-Malware Product

Editors' Best

GOLD:

Tripwire for Servers • Tripwire • www.tripwire.com

SILVER:

Managed Endpoint Protection Services • Symantec • www.symantec.com

BRONZE:

IronPort C-Series • Cisco • www.ironport.com

Community Choice

GOLD:

VIPRE Enterprise • Sunbelt Software • www.sunbeltsoftware.com

SILVER:

ESET NOD32 • ESET • www.eset.com

BRONZE:

OfficeScan • Trend Micro • www.trendmicro.com

"[Tripwire's] leading platform integrity checking software allow[s] for advanced data and system protection and centralized monitoring. [It's a] great tool for compliance purposes."—*Jan De Clercq, contributing editor, Windows IT Pro*

"Tripwire is an effective tool for protecting your network. The product is a great security add-on, regardless of your primary intrusion-detection software."—*Mark Joseph Edwards, senior contributing editor, Windows IT Pro*

Quotes from the Windows IT Pro community about Sunbelt Software's VIPRE Enterprise ...

"Easy to deploy, excellent value, low machine overhead."

"Least use of memory, least impact to system and processes, performs as well as (perhaps better than) the biggies."

"Totally reliable, catches and defends the environment more than any other product, and has the lowest CPU usage."

"It's fast and light on system resources. It's also not just antivirus (quarantine or delete files) but provides a brute-force clean-up of the crud left behind by malware (including dummy files, registry settings, DNS entries, and browser help objects)."

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Best Backup and Recovery Software Product

Editors' Best

GOLD:

Backup Exec 12.5 • Symantec • www.symantec.com

SILVER:

Backup Now 5.5 • NTI • www.ntius.com

BRONZE:

Tivoli Storage Manager • IBM • www.ibm.com

Community Choice

GOLD:

Backup Exec 12.5 • Symantec • www.symantec.com

SILVER:

Acronis Backup and Recovery • Acronis • www.acronis.com

BRONZE:

Veeam Backup & Replication • Veeam • www.veeam.com

Quotes from the Windows IT Pro community about Symantec's Backup Exec ...

"I no longer worry about data loss. Recovery time is quick, and backup and restore management is very convenient."

"Well laid out, reliable, great new features. Backing up Exchange Server is a breeze."

"Easy to use, with superior granular-recovery functionality."



"Backup Exec has become the industry standard for easy-to-use backup solutions for SMBs. Symantec and Dell even teamed up last year to provide a complete turn-key solution, which I wrote about in my review, 'Dell PowerVault DL2000 Powered by Symantec' (Instant-Doc ID 101476)." —Eric B. Rux, contributing editor, Windows IT Pro

"Backup Exec is probably the most well-known backup application among IT pros—and with good reason. Able to back up myriad sources from flat files to multi-instance SQL Server databases and store the backups on both disk and tape, this product has only gotten better with each version. It's particularly handy in heterogeneous environments because it can back up non-Windows platforms." —Michael Dragone, contributing editor, Windows IT Pro

Best Cloud Computing Product or Service

Editors' Best

GOLD:

Amazon Web Services • Amazon • www.amazon.com

SILVER:

Google Apps • Google • www.google.com

BRONZE:

Zmanda Cloud Backup • Zmanda • www.zmanda.com

Community Choice

GOLD:

Amazon Web Services • Amazon • www.amazon.com

SILVER:

Meraki Cloud Controller • Meraki • www.meraki.com

BRONZE:

Salesforce CRM • Salesforce.com • www.salesforce.com

Quotes from the Windows IT Pro community about Amazon Web Services ...

"Outstanding!"

"Best cloud computing product for enterprise-level cloud computing."

"Although Amazon Web Services isn't cheaper than running your own server in the long run—even in a hosted colocation facility—the ability to rapidly spin up additional capacity on a pay-as-you-go basis is extremely valuable. Amazon Web Services' management tools have become very mature, while staying easy to use, so you can easily and cheaply add Amazon Web Services to your bag of application hosting tricks." —Mel Beckman, contributing editor, SQL Server Magazine

"Google is a pioneer in offering applications in the cloud, and Google Apps has emerged—in some use cases—as a viable alternative to competing traditional IT solutions. It may not be a good fit for many organizations, but Google Apps is definitely making an impact." —Jeff James, Windows IT Pro

"Very simple and easy to manage."

FUN FACT:

Our Community Choice Awards received **7,900** total votes.

Best Business Intelligence and Reporting Tool

Editors' Best

GOLD:

Tableau 5.0 • Tableau Software • www.tableausoftware.com

SILVER:

NovaView 6.0 • Panorama Software • www.panorama.com

BRONZE:

Analyzer • Strategy Companion • www.strategycompanion.com

"What I like about Tableau 5.0 is that SQL Server professionals don't have to spend a lot of time training business users on how to use it—anyone can quickly learn to use this product to create active dashboards and reports and analyze data, as long as they have access to the Internet. Tableau 5.0 also lets you tie in to multiple data sources and create interactive visualizations that help you better understand your data, and therefore help you make informed business decisions, faster." —Megan Keller, associate editor, SQL Server Magazine and Windows IT Pro

"Filling the gaping hole left by Microsoft's absorption of ProClarity, Strategy Companion's Analyzer is the best solution to complete the Microsoft BI platform. Analyzer supports the full range of SQL Server Analysis Services features. It has a zero-footprint client interface, making it simple to deploy and manage with delivery options for SharePoint, Excel, and IE. Analyzer offers a powerful and intuitive set of analysis tools and visualizations that let business users make more confident decisions." —Douglas McDowell, contributor, SQL Server Magazine

"Giving stakeholders the information they need in a format they can understand is invaluable, and Tableau 5.0 does that better than just about any other BI tool." —Jeff James, Windows IT Pro

Community Choice

GOLD:

IT Analytics • Symantec • www.symantec.com

SILVER:

Crystal Reports • Business Objects • www.businessobjects.com

BRONZE:

XtraReports Suite • Developer Express • www.devexpress.com

Quotes from the Windows IT Pro community about Symantec's IT Analytics ...

"Leverages all the data inside the Altiris platform."

"Default cube schemas and reports, visual quality, ease of use, dynamic tables and graphs, benefits of SQL reporting services."

Best Deployment Product

Editors' Best

GOLD:

Prowess SmartDeploy Enterprise • Prowess • www.smartdeploy.com

SILVER:

Ghost • Symantec • www.symantec.com

BRONZE:

Acronis Snap Deploy 3 • Acronis • www.acronis.com

"SmartDeploy is a well thought-out deployment solution. It overcomes one of the major drawbacks of standard disk-imaging solutions—having to create a master image for each hardware platform—by providing Platform Packs to download at no additional cost."—Eric B. Rux, contributing editor, Windows IT Pro

"SmartDeploy gives IT pros a range of excellent templates and wizards to use through the deployment process, letting them save time and money and focus on more pressing problems. SmartDeploy is something that any IT pro tasked with deploying PCs should take a look at."—Jeff James, Windows IT Pro

Community Choice

GOLD:

Ghost • Symantec • www.symantec.com

SILVER:

Installaware • Installaware • www.installaware.com

BRONZE:

Specops Deploy • Specops Software • www.specopssoft.com

Quotes from the Windows IT Pro community about Symantec's Ghost ...

"Hands down, the best tool for quick, non-ghosted deployments."

"Creating and deploying images is a snap."

"It just
always
works!"

Your Favorite Vendor Support

Gold: Dell • www.dell.com

Silver: Microsoft • www.microsoft.com

Bronze: Symantec • www.symantec.com

Best Development Tool

Editors' Best

GOLD:

Adobe Dreamweaver • Adobe • www.adobe.com

SILVER:

Altova XMLSpy • Altova • www.altova.com

BRONZE:

TestComplete • AutomatedQA • www.automatedqa.com

"I've been using Dreamweaver for web development for more than a decade. No other web development app combines so many features with such an easy-to-use interface. Whether you're a DBA, IT pro, or end user, Dreamweaver is the best tool for the job."—Jeff James, Windows IT Pro

"TestComplete simplifies the entire testing process with the help of a powerful and lightweight integrated environment. It does the job of testing various applications very nicely."—Anand Narayanaswamy, technical editor, DevConnections

Community Choice

GOLD:

Adobe Dreamweaver • Adobe • www.adobe.com

SILVER:

Coderush • Developer Express • www.devexpress.com

BRONZE:

RadControls • Telerik • www.telerik.com

Quotes from the Windows IT Pro community about Adobe Dreamweaver ...

"This web editor simply does everything."

"Very highly recommended to anyone building websites."

"Everything is faster,
easier, and more
intuitive with
Dreamweaver."

Best Hardware: Server



Editors' Best

GOLD:

ProLiant DL380 series • HP • www.hp.com

SILVER:

NEC 5800 series • NEC • www.nec.com

BRONZE:

PowerEdge • Dell • www.dell.com

Community Choice

GOLD:

ProLiant DL380 series • HP • www.hp.com

SILVER:

PowerEdge 2900 series • Dell • www.dell.com

BRONZE:

IBM BladeCenter Server • IBM • www.ibm.com

"The ProLiant line of servers is likely represented in every data center in existence. The DL380 is the workhorse of many IT shops, and for good reason: reasonably priced, extensive support options, and myriad configurations."—Michael Dragone, contributing editor, Windows IT Pro

"Hardware is hardware. The real question is, 'Who is going to answer the phone when you have a problem?' HP support is rock solid. Period."—Eric B. Rux, contributing editor, Windows IT Pro

"The HP ProLiant DL380 servers are fantastic virtualization hosts."—Alan Sugano, contributing editor, Windows IT Pro

Quotes from the Windows IT Pro community about HP's ProLiant DL380 servers ...

"Excellent power, reliability, and manageability for a solid price."

"HP products always have fewer problems than those of other vendors."

"Reasonably
priced, reliable,
and highly
expandable."

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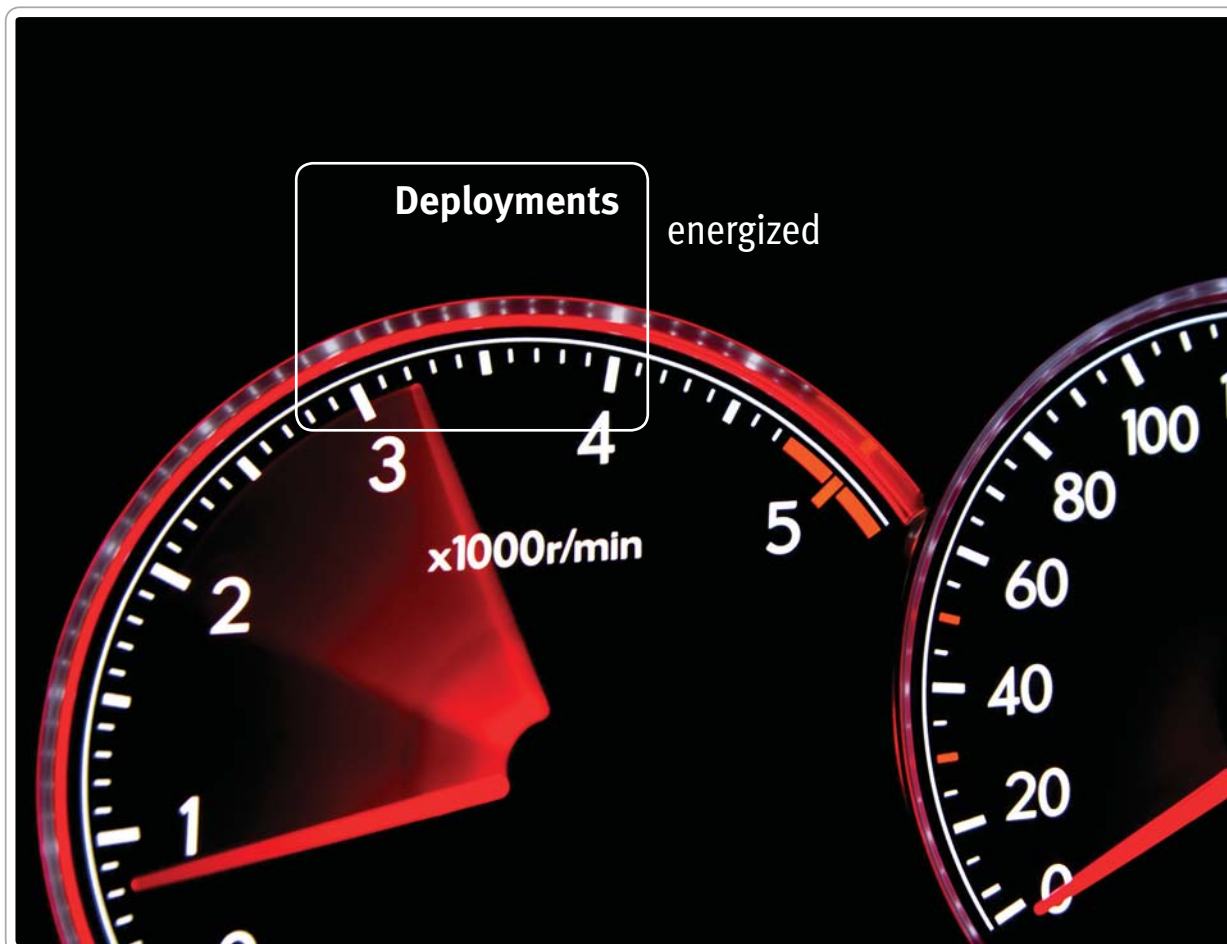
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Best Hardware: Networking

Editors' Best

GOLD:

Cisco routers and switches • Cisco • www.cisco.com

SILVER:

NSA series of firewalls • SonicWALL • www.sonicwall.com

BRONZE:

Barracuda Link Balancer • Barracuda Networks • www.barracudanetworks.com

Community Choice

GOLD:

Cisco routers and switches • Cisco • www.cisco.com

SILVER:

ProCurve switches • HP • www.hp.com

BRONZE:

EtherFast switches • Linksys • www.linksys.com

"While not often receiving the tender, loving care that other IT hardware and software does, in today's Web 2.0 cloud-compelled IT world the humble Cisco products are the plumbing that keeps most (if not all) of us afloat in some way, shape, or form. I have yet to meet an IT pro who didn't have some piece of Cisco gear somewhere in their environment."—*Michael Dragone, contributing editor, Windows IT Pro*

"My old boss used to tell me, 'Nobody ever got fired for buying Cisco gear.'"—*Eric B. Rux, contributing editor, Windows IT Pro*

Quotes from the Windows IT Pro community about Cisco's routers and switches ...

"I've never had any problems after implementing Cisco gear."

"Cisco always offers great support—quick, efficient, and generally knowledgeable about their products."

"It simply works."

Best Hardware: Workstation

Editors' Best

GOLD:

ThinkStation S20 • Lenovo • www.lenovo.com

SILVER:

OptiPlex 760 • Dell • www.dell.com

BRONZE:

ThinkPad W700 • Lenovo • www.lenovo.com

Community Choice

GOLD:

OptiPlex 760 • Dell • www.dell.com

SILVER:

HP Z800 • HP • www.hp.com

BRONZE:

ThinkCentre • Lenovo • www.lenovo.com

"Designed for intensive tasks such as computer-aided design/engineering, scientific applications, and digital content creation, Lenovo's ThinkStation S20 is a powerhouse. This desktop workstation packs a whopping amount of power into an affordable price point for any organization."—*Douglas Toombs, contributor, Windows IT Pro*

"The Lenovo ThinkPad W700 is a monster of a portable machine, with a 2.53GHz quad-core Intel Core 2 Extreme processor T9300 (6MB, 1066MHz), 4GB of RAM, a 250GB hard drive, a 17" screen running at 1920 x 1200, and a built-in Wacom digitizer."—*Paul Thurrott, news editor, Windows IT Pro*

Quotes from the Windows IT Pro community about Dell's OptiPlex 760 workstations ...

"Dell makes workstations that are solid performers. Great warranty. I've been very lucky with my desktops and had pretty much zero system failures."

"Inexpensive, high quality, very dependable."



We're in IT with You



Best Hardware: Laptop

Editors' Best

GOLD:

Lenovo T400 • Lenovo • www.lenovo.com

SILVER:

MacBook Pro • Apple • www.apple.com

BRONZE:

EliteBook • HP • www.hp.com

"The ThinkPad 400 offers familiar ThinkPad advantages like a best-in-class keyboard, solid build quality, and custom add-in software that actually enhances the Windows user experience. The system is also one of the sleekest, lightest, and most elegant notebooks ever created. The best news? It's available with an optional multi-touch screen, too."—*Paul Thurrott, news editor, Windows IT Pro*

"Apple's \$1,200 13" Macbook Pro is easily the highest-quality notebook I've ever used, and as a network engineer I've been forced to use everything. Its seven-hour battery life is the real deal, too, not some trumped-up laboratory-only number. I routinely get eight hours of working time on my MacBook Pro."—*Mel Beckman, contributing editor, SQL Server Magazine*

"Now available with SSD drives, LCD backlit screens with desktop-worthy screen resolutions, and switchable discreet graphics while still featuring the awesome ThinkPad keyboard and docking options, the [ThinkPad T-Series] packs a punch without weighing you down or breaking the bank."—*Michael Dragone, contributing editor, Windows IT Pro*

Community Choice

GOLD:

Latitude • Dell • www.dell.com

SILVER:

MacBook Pro • Apple • www.apple.com

BRONZE:

EliteBook • HP • www.hp.com

Quotes from the Windows IT Pro community about Dell's Latitude laptops ...

"Exceptionally lightweight with great battery life."

"Just a terrific combination of features and functionality on the road."

"A sturdy, reliable performer."

"Bulletproof!"

Best Hardware: Appliance

Editors' Best

GOLD:

Bomgar Box • Bomgar • www.bomgar.com

SILVER:

SA 500 Series Security Appliances • Cisco • www.cisco.com

BRONZE:

Barracuda Spam Firewall • Barracuda Networks • www.barracudanetworks.com

Community Choice

GOLD:

Cisco ASA 5500 Series • Cisco • www.cisco.com

SILVER:

SonicWALL NSA 2400 • SonicWALL • www.sonicwall.com

BRONZE:

Barracuda Spam Firewall • Barracuda Networks • www.barracudanetworks.com

"If you need to provide remote support to your users on just about any device and don't want to use a cloud-based solution, it's hard to beat a Bomgar Box. Available in several different affordable configurations, it's an overlooked device that should be considered."—Michael Dragone, contributing editor, Windows IT Pro

"The Bomgar Box is an appliance preloaded with the latest release of the company's remote support software. The solution enables attended and unattended remote PC access with multi-platform support."—Caroline Marwitz, associate editor, Windows IT Pro

Quotes from the Windows IT Pro community about Cisco's ASA 5500 series ...

"One device instead of many devices equals lots of extra cash in the budget."

"It performs exquisitely at so many security tasks."

"Robust, stable, easy to use."



Best Hardware: Storage

Editors' Best

GOLD:

Intel SSD drives • Intel • www.intel.com

SILVER:

nTier Deduplication appliance • SpectraLogic • www.spectralogic.com

BRONZE:

DroboPro • Data Robotics • www.drobo.com

Community Choice

GOLD:

EMC CLARiiON • EMC • www.emc.com

SILVER:

EqualLogic PS5000 • Dell • www.dell.com

BRONZE:

NetApp FAS3100 • NetApp • www.netapp.com

"As the price of SSD drives continues to plummet, you'll need to seriously consider taking the leap. It's the most worthwhile upgrade you can make to any computer system these days, and the Intel drives are among the best SSDs available."—Michael Dragone, contributing editor, Windows IT Pro

"Intel SSDs—along with the rise of virtualization and the boom in iSCSI SAN adoption—are undoubtedly contributing to a revolution of storage in the enterprise."—Jeff James, Windows IT Pro

"The Drobo is exactly what today's IT pros need—automated, easy-to-use backup functionality in the form of a cool gadget."—Jason Bovberg, senior editor, Windows IT Pro

Quotes from the Windows IT Pro community about EMC CLARiiON ...

"Easy-to-use, affordable networked storage."

"The new virtual-aware EMC CLARiiON is perfect for my VMware environment."

"Love the expandability."



Best High Availability/Disaster Recovery Product

Editors' Best

GOLD:

everRun VM • Marathon Technologies • www.marathontechnologies.com

SILVER:

DataKeeper Cluster Edition • SteelEye Technology • www.steeleye.com

BRONZE:

Veritas Storage Foundation HA for Windows • Symantec • www.symantec.com

"Marathon Technologies' everRun VM is a snap to deploy, is easy to use, and is loaded with features. If you need to protect your virtual infrastructure from an unforeseen mistake or mishap, everRun VM is a great choice."—Jeff James, Windows IT Pro

"I really like the simplified approach that everRun VM takes to server availability: The completely automated setup and configuration make it a unique product in the arena."—Jason Bovberg, senior editor, Windows IT Pro

Community Choice

GOLD:

DataKeeper Cluster Edition • SteelEye Technology • www.steeleye.com

SILVER:

Veritas Storage Foundation HA for Windows • Symantec • www.symantec.com

BRONZE:

True Image Echo Server • Acronis • www.acronis.com

Quotes from the Windows IT Pro community about SteelEye's DataKeeper Cluster Edition ...

"A cost-effective and comprehensive DR solution."

"Very reasonably priced for what you get."

Your Top 10 Most Overused IT Buzzwords

10. "ROI"
9. "Paradigm"
8. "Anything -ware: malware, spyware, adware..."
7. "Robust"
6. "Virtualize"
5. "Convergence"
4. "Green"
3. "Cloud"
2. "Web 2.0"
1. "Tweet"

Best IT Automation Product

Editors' Best

GOLD:

Automation Anywhere Enterprise • Automation Anywhere • www.automationanywhere.com

SILVER:

NetIQ Aegis • NetIQ • www.netiq.com

BRONZE:

AutoMate 7 • Network Automation • www.networkautomation.com

"Automation Anywhere Enterprise isn't the only IT automation product on the market, but it's arguably one of the best."—Jeff James, Windows IT Pro

"This best-of-breed solution lets you easily design and manage your automation task—without the necessity of programming knowledge."—Jason Bovberg, senior editor, Windows IT Pro

Community Choice

GOLD:

AutoMate 7 • Network Automation • www.networkautomation.com

SILVER:

Kaseya 6.0 • Kaseya • www.kaseya.com

BRONZE:

NetIQ Aegis • NetIQ • www.netiq.com

Quotes from the Windows IT Pro community about Network Automation's AutoMate 7 ...

"Automates common IT scripting processes via an intuitive, easy-to-use IDE."

"I can honestly say that this product has streamlined and simplified my job."

FUN FACT:

Windows XP Professional had a strong showing in the Microsoft category, perhaps indicating that Windows 7 adoption won't be as robust as Microsoft hopes it will be. **What do you think?**

Best Messaging Product

Editors' Best

GOLD:

PROMODAG Reports for Microsoft Exchange Server 8.5 • PROMODAG • www.promodag.com

SILVER:

Zenprise MobileManager • Zenprise • www.zenprise.com

BRONZE:

E-mail Security Platform • Sendio • www.sendio.com

"PROMODAG remains the gold standard for Exchange admins who want to mine message tracking logs for data to help them understand the volume of messages their servers handle. PROMODAG Reports is a great example of sustained success because they take a source of data that Microsoft has largely ignored and use it to provide insight that is compelling and valuable for administrators."—Tony Redmond, contributing editor, Windows IT Pro

"As a mature product, PROMODAG Reports manages reporting for Exchange quite well. The product is simple and it works. It has well over 100 reports and certainly includes all the reports most requested by customers. PROMODAG Reports is an excellent choice for SMBs."—William Lefkovich, contributor, Windows IT Pro

Community Choice

GOLD:

Skype • Skype • www.skype.com

SILVER:

Google Apps • Google • www.google.com

BRONZE:

Lotus Notes • IBM • www.ibm.com

Quotes from the Windows IT Pro community about Skype ...

"I've loved Skype since the first day I used it."

"Free VoIP, anywhere in the world!"

"In a class by itself."

Best Interoperability Product

Editors' Best

GOLD:

Centrify Suite 2008 • Centrify • www.centrify.com

SILVER:

Splunk • Splunk • www.splunk.com

BRONZE:

Quest Authentication Services • Quest Software • www.quest.com

"If you're a systems administrator in charge of managing a diverse assortment of platforms and OSs while simultaneously remaining compliant with complex regulatory requirements such as HIPAA, SOX, and PCI, you should put Centrify Suite 2008 on your shopping list."—Jeff James, Windows IT Pro

"We love Centrify DirectControl. It allows our clients to easily integrate their non-Windows systems into Active Directory (AD), and we can even support AD GPO's on Linux, UNIX, and Macs!"—Dustin Puryear, contributor, Windows IT Pro

Community Choice

GOLD:

Quest Authentication Services • Quest Software • www.quest.com

SILVER:

GroupLogic ExtremeZ-IP 6.0 • GroupLogic • www.grouplogic.com

BRONZE:

Centrify Suite 2008 • Centrify • www.centrify.com

Quotes from the Windows IT Pro community about Quest Authentication Services ...

"Lets us extend AD's security and compliance such that identities from UNIX, Linux, and Mac platforms and enterprise applications can interoperate with AD."

"Stellar product, great support."

Your Top 10 Most Encouraging IT Trends

10. "Software as a Service (SaaS), turnkey solutions, less time wasted on infrastructure."
9. "Dual-core and quad-core computing."
8. "Increasing power of mobile phones and devices."
7. "More women in IT."
6. "Microsoft seems to finally be getting things right again."
5. "Social networking."
4. "Open-source acceptance."
3. "Solid state drives."
2. "Cloud computing."
1. "Virtualization."

Your Top 10 Least Encouraging IT Trends

10. "Umbrella suites that force you to buy more functionality than you need."
9. "Products released in beta mode."
8. "Cloud computing."
7. "Virtualization."
6. "Leveraging legacy systems while adopting innovation."
5. "Open-source solutions."
4. "Social networking."
3. "Malware."
2. "Outsourcing."
1. "Global recession: Pay isn't bouncing back."



Best Microsoft Product

Editors' Best

GOLD:

Windows Server 2008 • Microsoft • www.microsoft.com

SILVER:

SQL Server 2008 • Microsoft • www.microsoft.com

BRONZE:

System Center Virtual Machine Manager 2008 • Microsoft • www.microsoft.com

"Windows Server 2008 is undoubtedly the best Windows Server product yet, and serves as a solid foundation to build a Windows IT infrastructure. Server 2008 R2 promises to make this stand-out product an even more stellar performer."

—Jeff James, Windows IT Pro

"Microsoft continues to improve the SQL Server platform, and SQL Server 2008 should help Microsoft continue to make inroads into larger and larger enterprise applications."

—Jeff James, Windows IT Pro

Community Choice

GOLD:

Exchange Server 2007 • Microsoft • www.microsoft.com

SILVER:

Office 2007 Professional • Microsoft • www.microsoft.com

BRONZE:

Windows XP Professional • Microsoft • www.microsoft.com

Quotes from the Windows IT Pro community about Microsoft Exchange Server 2007 ...

"It integrates with everything I do."

"It's a beast."

FUN FACT: We limited all Microsoft commercial products to the Best Microsoft Product category.

Best Network Management Product

Editors' Best

GOLD:

Observer 13 • Network Instruments • www.networkinstruments.com

SILVER:

Orion Network Performance Monitor • SolarWinds • www.solarwinds.com

BRONZE:

EventSentry • NETIKUS.NET • www.netikus.net

"Network Instruments continues to be a groundbreaker in the realm of network management, and its Observer monitoring platform—which prides itself on retrospective network analysis (essentially a "TiVo for your network")—is testament to that. The latest version of Observer brings the power of real-time analysis to virtualized environments."—Jason Bovberg, senior editor, Windows IT Pro

"If you've ever dreamed of attaining unprecedented visibility into your network and the devices that connect to it, you need to take a look at Observer. This product just keeps getting better."—Jeff James, Windows IT Pro

Community Choice

GOLD:

NetFlow • Cisco Systems • www.cisco.com

SILVER:

Orion Network Performance Monitor • SolarWinds • www.solarwinds.com

BRONZE:

GFI Network Server Monitor • GFI • www.gfi.com

Quotes from the Windows IT Pro community about Cisco Systems' NetFlow ...

"More a standard now than a product, it's just the essential information at the heart of network traffic."

"Industry standard."

Best Mobile and Wireless Product

Editors' Best

GOLD:

iPhone 3GS • Apple • www.apple.com

SILVER:

BlackBerry Bold • Research in Motion • www.blackberry.com

BRONZE:

Athena • Odyssey Software • www.odysseysoftware.com

"Apple has clearly shaken up the smartphone industry, and other smartphone vendors are struggling to reach parity. Cheaper mobile phone solutions exist for the enterprise, but none are having as large of an impact on the mobile enterprise as the iPhone."—Jeff James, Windows IT Pro

"The iPhone 3GS has terrific fit and finish, the web browser is better than anything available on any other mobile device platform, and the UI is polished, fast, and easy to learn."—Paul Robichaux, contributing editor, Windows IT Pro

Community Choice

GOLD:

iPhone OS 3.0 • Apple • www.apple.com

SILVER:

BlackBerry Enterprise Server • Research in Motion • www.blackberry.com

BRONZE:

AstraSync for BlackBerry • MailSite Software • www.mailsite.com

Quotes from the Windows IT Pro community about Apple's iPhone OS 3.0 ...

"It's the best mobile OS by far."

"An even better fit for the enterprise."



FUN FACT: The Apple iPhone and Apple MacBook Pro received a healthy number of votes from Windows-based IT pros. Is the Mac making surprising headway in the enterprise?



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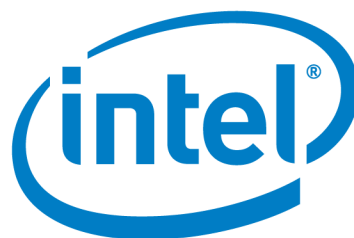


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Category: **Best Hardware: Storage**

Product: **Intel® Solid-State Drives**

Award: **Gold**

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Best Patch Management Product

Editors' Best

GOLD:

Shavlik NetChk Protect • Shavlik • www.shavlik.com

SILVER:

ZENworks Patch Management • Novell • www.novell.com

BRONZE:

Numara Patch Manager • Numara Software • www.numarasoftware.com

"Shavlik NetChk Protect does a terrific job of automating the patch process, and its scheduler is particularly effective, discovering and deploying patches while constantly monitoring system needs."—Jason Bovberg, senior editor, Windows IT Pro

"Whether you need patch management, asset management, or security management, Shavlik NetChk Protect makes your job easier by automating your troubleshooting efforts. Today's less-is-more IT departments need this kind of tool to handle these types of tasks."

—Jeff James, Windows IT Pro

Community Choice

GOLD:

Patch Authority Ultimate • ScriptLogic • www.scriptlogic.com

SILVER:

ZENworks Patch Management • Novell • www.novell.com

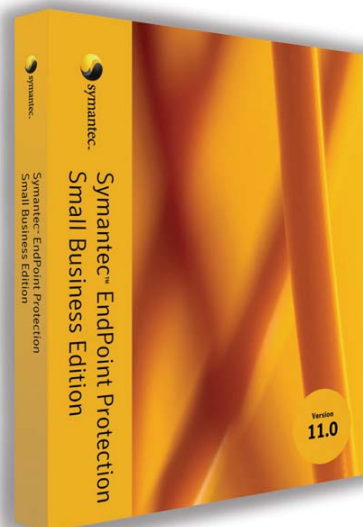
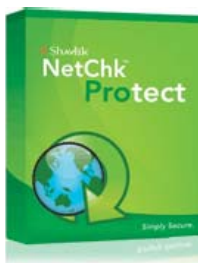
BRONZE:

Prism Patch Manager • New Boundary Technologies • www.newboundary.com

Quotes from the Windows IT Pro community about ScriptLogic's Patch Authority Ultimate ...

"For the enterprise, there's just nothing more complete."

"Lets you accomplish everything you need to do from one central UI."



Best Security Product

Editors' Best

GOLD:

Likewise Open 5.1 • Likewise • www.likewise.com

SILVER:

F5 BIG-IP Local Traffic Manager 10.0 • F5 • www.f5.com

BRONZE:

HP ProtectTools • HP • www.hp.com

"Likewise Open is a nice Windows, UNIX, Linux, Mac integration product allowing for centralized security management from Active Directory and Enterprise single sign-on (SSO)."—Jan De Clercq, contributing editor, Windows IT Pro

"Likewise Open is a treat to the networking community. The software lets Linux and UNIX systems authenticate to an Active Directory server and is capable of providing single sign-on (SSO) functionality."—Mark Joseph Edwards, senior contributing editor, Windows IT Pro

Community Choice

GOLD:

Symantec Endpoint Protection • Symantec • www.symantec.com

SILVER:

GFI EndPointSecurity • GFI • www.gfi.com

BRONZE:

Citrix Access Gateway • Citrix • www.citrix.com

Quotes from the Windows IT Pro community about Symantec Endpoint Protection ...

"It's got the most complete assemblage of functionality and innovation."

"Best in class. I use it every day and have never had a virus."

"Most comprehensive endpoint security solution on the market today."

Best Scripting Tool

Editors' Best

GOLD:

PowerShell Plus Professional Edition • Idera • www.idera.com

SILVER:

PrimalForms 2009 • Sapient Technologies • www.sapient.com

BRONZE:

WMIX 2.0 • PJ Technologies • wmix.pjtec.com

"PowerShell Plus has features that all types of administrators can use, no matter the type of systems they manage or how well-versed they are in PowerShell. It's a well-rounded IDE."—Karen Bemowski, senior editor, Windows IT Pro

"PowerShell Plus is simply the most effective IDE available. Even if you're a PowerShell expert, you'll benefit from this product's powerful console and script debugger."—Jeff James, Windows IT Pro

Community Choice

GOLD:

PowerShell Plus Professional Edition • Idera • www.idera.com

SILVER:

TextPad • Helios Software Solutions • www.textpad.com

BRONZE:

UltraEdit • IDM Computer Solutions • www.ultraedit.com

Quotes from the Windows IT Pro community about Idera's PowerShell Plus ...

"The library of sample solutions is great to jumpstart some necessary administrative tasks."

"Best-of-breed IDE for PowerShell. It's a must-have for PowerShell users."

"Best debugging and code completion for PowerShell scripts. Period."

FUN FACT: Windows 7 was ineligible for this year's Editors' Best and Community Choice awards because it wasn't released at press time. However, just for fun, we included it as a choice in our voting, and it took the top prize in the Best Microsoft Product category, suggesting that it's got a lot of buzz building in its pre-release state. Contributing editor Michael Dragone says, "If you skipped Windows Vista, as the majority of the IT world did, you might be approaching Windows 7 with some hesitation. Don't. Windows 7 is polished and ready for enterprise prime-time."

Best SharePoint Product

Editors' Best

GOLD:

ControlPoint for SharePoint • Axceler • www.axceler.com

SILVER:

Professional Archive Manager for SharePoint • Metalogix • www.metalogix.net

BRONZE:

NearPoint for SharePoint • Mimosas Systems • www.mimosasystems.com

"ControlPoint helps IT pros get better control of their SharePoint environment through permissions management, content management, in-depth usage analysis, policy enforcement, and flexible alerts and scheduled analyses."

—Jeff James, Windows IT Pro

"ControlPoint helps you manage and monitor large farms effectively and integrates well with the existing SharePoint UI; the ability to manage user permission levels is nicely implemented."—Curt Spanburgh, contributing editor, Windows IT Pro

Community Choice

GOLD:

Site Administrator for SharePoint • Quest Software • www.quest.com

SILVER:

Colligo Contributor Pro • Colligo Networks • www.colligo.com

BRONZE:

CorasWorks Workplace Suite 10 • CorasWorks • www.corasworks.com

Quotes from the Windows IT Pro community about Quest Software's Site Administrator for SharePoint ...

"Has helped me completely understand and manage my entire SharePoint environment."

"For SharePoint management of servers and sites, it's the best and most comprehensive product out there."



Best Systems Management Product

Editors' Best

GOLD:

Double-Take Move • Double-Take • www.doubletake.com

SILVER:

Prowess SmartDeploy Enterprise • Prowess • www.smartdeploy.com

BRONZE:

GPOAdmin with netPro NetControl • Quest Software • www.quest.com

"Double-Take Move is an impressive, no-fuss solution that has all bases covered; it eliminates the hazards associated with migration to new hardware, uses mature technology with support for locked files, is hardware independent, and even captures NTFS alternate data streams and transactions. Applications and users can stay online during migration and experience only a short disruption in service during cutover."—Russell Smith, contributor, Windows IT Pro

"SmartDeploy overcomes one of the major drawbacks of standard disk-imaging solutions—having to create a master image for each hardware platform—by providing Platform Packs to download at no additional cost."—Eric B. Rux, contributing editor, Windows IT Pro

Community Choice

GOLD:

Altiris Client Management Suite • Symantec • www.symantec.com

SILVER:

Desktop Authority • ScriptLogic • www.scriptlogic.com

BRONZE:

HP Operations Manager • HP • www.hp.com

Quotes from the Windows IT Pro community about Symantec's Altiris Client Management Suite ...

"Out of all the vendors we considered, Symantec offered the most comprehensive capabilities."

"By far the best in the market for multi-platform, multi-device client management."

"Industry leader."

Best System Utility

Editors' Best

GOLD:

Diskeeper 2009 • Diskeeper • www.diskeeper.com

SILVER:

Norton SystemWorks Basic Edition 12.0 • Symantec • www.symantec.com

BRONZE:

GFI Network Server Monitor • GFI • www.gfi.com

"Diskeeper does its job well. It defragments in the background without hurting system performance and doesn't require defragmentation scheduling."—Zac Wiggy, assistant editor, Windows IT Pro

"Diskeeper 2009 is loaded with features, works as advertised, and can bring the most choppy and fragmented hard drive back to silky-running smoothness."—Jeff James, Windows IT Pro

Community Choice

GOLD:

Norton SystemWorks • Symantec • www.symantec.com

SILVER:

Diskeeper 2009 • Diskeeper • www.diskeeper.com

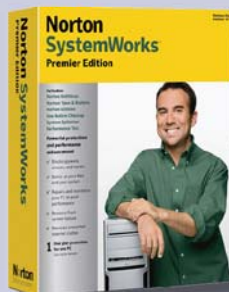
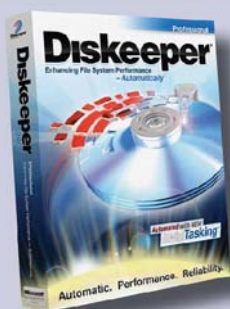
BRONZE:

Acronis Disk Director • Acronis • www.acronis.com

Quotes from the Windows IT Pro community about Symantec's Norton SystemWorks ...

"I had a sluggish, mostly unresponsive computer, and after letting Norton SystemWorks loose on it, the system is now as fast as it used to be."

"I've always had great luck with Norton products."



Best Free or Open Source IT Tool



Editors' Best

GOLD:

Spiceworks • Spiceworks • www.spiceworks.com

SILVER:

PowerGUI • Quest Software • www.powergui.org

BRONZE:

Truecrypt • Truecrypt • www.truecrypt.com

"Spiceworks is arguably the best of a new breed of free, web-based services for IT pros that combine impressive feature sets with active, online communities."—Jeff James, Windows IT Pro

"Designing and configuring a full-blown SNMP-based network management system (NMS) console can be an expensive and time-consuming process. Spiceworks eliminates the tedium and lowers the up-front cost by delivering an NMS console as a web service hosted offsite."—Mel Beckman, contributing editor, SQL Server Magazine

"There are a lot of PowerShell scripting and GUI tools on the market these days, but PowerGUI remains one of the best, and it's free!"—Jeff James, Windows IT Pro

Community Choice

GOLD:

Sysinternals Suite • Microsoft • www.microsoft.com

SILVER:

Adobe Reader • Adobe • www.adobe.com

BRONZE:

AVG Free • AVG Technologies • www.avg.com

Quotes from the Windows IT Pro community about Microsoft's Sysinternals Suite ...

"You might not need all of these tools, but the ones you do need are absolutely essential."

"No IT pro can afford to be without these tools."

"A must-have collection for the serious admin."

Best Training and Certification Product or Service

Editors' Best

GOLD:

LabSim • TestOut • www.testout.com

SILVER:

Train Signal Computer Training Videos • Train Signal • www.trainsignal.com

BRONZE:

PrepLogic eLearning Videos • PrepLogic • www.preplogic.com

"TestOut's LabSim is a true innovator in the IT training and certification space. Newcomers to the field can gain a level of hands-on experience on or off campus unlike ever before, and seasoned professionals have easy access to skills-based online training to earn additional certifications or degrees."—Brian Reinholz, production editor, Windows IT Pro

"The thing I like most about PrepLogic's certification practice exams, like Network+ 2009 practice exam, is the answers. You're not going to get feedback like 'C is the correct answer.' Instead, the exams explain why the correct answers are right and why the incorrect answers are wrong. It's a real learning experience."—Tom Carpenter, contributor, Windows IT Pro

Community Choice

GOLD:

Train Signal Computer Training Videos • Train Signal • www.trainsignal.com

SILVER:

LabSim • TestOut • www.testout.com

BRONZE:

Global Knowledge IT Training Classes • Global Knowledge • www.globalknowledge.com

Quotes from the Windows IT Pro community about Train Signal's training videos ...

"Train Signal videos are definitively the building blocks of creating a solid foundation when learning a technology such as Exchange 2007."

"Very polished, excellent instruction."

Best Virtualization Product

Editors' Best

GOLD:

VMware vSphere 4 • VMware • www.vmware.com

SILVER:

NxTop • Virtual Computer • www.virtualcomputer.com

BRONZE:

Citrix XenServer 5.5 • Citrix • www.citrix.com

"VMware vSphere 4 has a lot of nice new features, but you can justify the upgrade by the increase in performance alone. We're seeing performance increases of 20 to 30 percent and in some cases even higher depending on the application with the same hardware."—Alan Sugano, contributing editor, Windows IT Pro

Community Choice

GOLD:

VMware ESX Server 3.5 • VMware • www.vmware.com

SILVER:

Endpoint Virtualization Suite • Symantec • www.symantec.com

BRONZE:

Citrix XenServer • Citrix • www.citrix.com

Quotes from the Windows IT Pro community about VMware ESX Server 3.5 ...

"Simply the most important, sophisticated virtualization product on the market."

InstantDoc ID 102984

"It's evolved into such a mature virtualization product!"

Your Top 10 Favorite IT Websites

10. Google (www.google.com)
9. Major Geeks (majorgeeks.com)
8. Microsoft TechNet (technet.microsoft.com)
7. The Register (www.theregister.co.uk)
6. Server Fault (www.serverfault.com)
5. Slashdot (slashdot.org)
4. Windows IT Pro (www.windowsitpro.com)
3. GPsAnswers.com (www.gpsanswers.com)
2. The CodeProject (www.codeproject.com)
1. Experts Exchange (www.experts-exchange.com)

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CUSTOMIZING SHAREPOINT 2010 ENTERPRISE CONTENT MANAGEMENT DOCUMENT SETS ANDREW CONNELL

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GENERATE AND PUBLISH ELECTRONIC FORMS ON YOUR INTRANET USING INFOPATH 2010... NO CODE REQUIRED! ASIF REHMANI

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PROGRAMMING BUSINESS CONNECTIVITY SERVICES SOLUTIONS IN OFFICE 2010 JOHN HOLLIDAY

EXTENDING THE VISUAL STUDIO 2010 SHAREPOINT TOOLS TED PATTISON

SECURITY CHANGES AND ENHANCEMENTS IN SHAREPOINT 2010 TED PATTISON

BEST PRACTICES FOR ACCESSING SHAREPOINT 2010 LIST DATA SCOT HILLIER

USING BUSINESS CONNECTIVITY SERVICES TO ACCESS EXTERNAL SYSTEMS WITH SHAREPOINT 2010 SCOT HILLIER

CREATING SEARCH-BASED SOLUTIONS WITH SHAREPOINT 2010 SCOT HILLIER

CREATING CUSTOM OFFICE BUSINESS APPLICATIONS WITH BUSINESS CONNECTIVITY SERVICES AND THE SHAREPOINT CLIENT OBJECT MODEL TODD BAGINSKI

HOW TO CREATE A YOUTUBE-LIKE APPLICATION IN SHAREPOINT WITH THE DIGITAL ASSETS LIBRARY - WITHOUT WRITING ANY MANAGED CODE! TODD BAGINSKI

SHAREPOINT 2010 DEVELOPER BEST PRACTICES KIRK EVANS

DEVELOPING ADVANCED SHAREPOINT 2010 WORKFLOWS WITH VISUAL STUDIO 2010 KIRK EVANS

APPLICATION LIFECYCLE MANAGEMENT WITH SHAREPOINT 2010 AND TEAM FOUNDATION SERVER 2010 KIRK EVANS

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Plan and Execute an Active Directory Merger Part 2

When your prep work is done,
let the migration begin

by Eric B. Rux

Your company has just joined with another company, and suddenly you find yourself needing to combine your IT infrastructures. In “Plan and Execute an Active Directory Merger, Part 1” (October 2009, InstantDoc ID 102596), I described a scenario in which the smaller company’s domain, Old.local, was being merged into the larger company’s domain, New.local. You can follow the steps in that article to prepare for your migration. Now it’s time to start merging the Active Directory (AD) and Exchange Server networks of the two companies.

Migrate the Users and PCs

If you’ve performed all the preparation outlined in Part 1, you should now be ready to migrate the AD objects from the Old.local domain to the New.local domain. It’s important that you go slowly so that you have time to work through any problems that arise. When you’re ready, start by mov-

PROBLEM:

You need to merge the Active Directory and Exchange Server infrastructures from two companies.

SOLUTION:

Use the Active Directory Migration Tool (ADMT) to move users and computers from the smaller company to the larger one, then use Exchange Server’s native migration wizard to move mailboxes to a new Exchange organization in the new company.

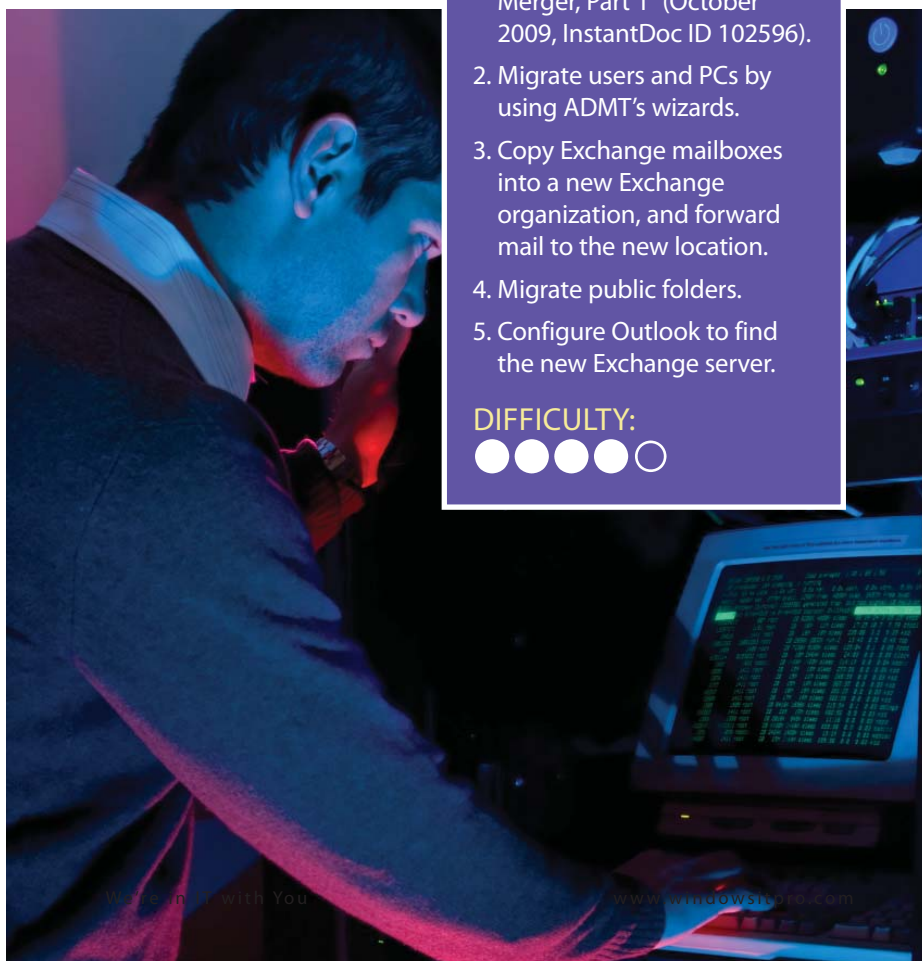
WHAT YOU NEED:

ADMT, the Inter-Organization Replication tool, Microsoft Exchange Server Exchange Profile Redirector (ExProRe.exe), network connectivity between the two sites

SOLUTION STEPS:

1. Prepare for merger as described in “Plan and Execute an Active Directory Merger, Part 1” (October 2009, InstantDoc ID 102596).
2. Migrate users and PCs by using ADMT’s wizards.
3. Copy Exchange mailboxes into a new Exchange organization, and forward mail to the new location.
4. Migrate public folders.
5. Configure Outlook to find the new Exchange server.

DIFFICULTY:



ing yourself, then move on to the other users and computers in the IT department. If you start with yourself, you'll be sure to have all of the kinks worked out before migrating the rest of the company.

The first time you attempt to migrate an object from one domain to the other, the Active Directory Migration Tool (ADMT) prompts you for some additional setup tasks that ADMT will take care of for you. Accept the pop-ups so that auditing will be turned on, and so that a special group, Domain\$\$\$, can be created. After the first time you migrate an object, you won't be prompted for these actions again.

To migrate users, follow these steps:

1. Log on to the dedicated migration server created in Part 1 and open ADMT.
2. Right-click Active Directory Migration Tool and choose User Account Migration Wizard, as Figure 1 shows.
3. Enter the source and target domains. The domain controllers (DCs) you choose should have fast connections to each other.
4. Select the users from the domain. Because the user objects are copied, not moved, I suggest migrating the users in large groups or even all at once.
5. Select the target organizational unit (OU) that users will reside in on the new domain.
6. Migrate passwords. Note that the Password Export Server (PES) setup performed in Part 1 is required to migrate passwords. Also, ensure that the PES service is running on the source DC; this NT Service is set to Manual by default.
7. Set Target Account State to *Target same as source*. You can also choose to disable the accounts from the source domain if you want to prevent the users from logging on to the old domain.
8. Be sure to check the *Migrate user SIDs to target domains* check box. This is a very important step.
9. Enter the domain administrator and password for the *source* domain.
10. Select the *Update user rights* and *Fix users' group memberships* check boxes on the Group Options page of the wizard.
11. Don't exclude any properties on the Group Object page of the wizard—leave all check boxes cleared.

12. Don't migrate the source object if there's a conflict.

The migration takes only a few seconds for each user object; when migration is complete, you get a report showing the number of objects that were examined and copied as well as any that had errors. After you migrate a few users, verify that the SID History attribute was populated correctly by viewing users' properties in ADSI Edit; you can see an example in Part 1.

After the users have been migrated, you can migrate their computers. Keep in mind that user migration copies data to the new domain but computer migration moves data to the new domain. For this reason, you need to plan the move to the new domain ahead of time and communicate it well with your users. It might be a good idea to briefly explain to them what you are doing. Give them a screen shot of how to log on to the new domain to ensure they log on to New.local.

Follow these steps to migrate machines to the new domain:

1. Move the computer object in the Microsoft Management Console (MMC) AD Users and Computers snap-in to your special MigrationPrep OU, then reboot the PC. As you'll recall from Part 1, this procedure turns off the Windows Firewall and adds the appropriate users or groups to the Local Administrator Group.
2. Log on to the migration server and open ADMT.
3. Right-click Active Directory Migration Tool, and choose Computer Migration Wizard.
4. Enter the source and target domains.
5. Select the computers you want to migrate from the domain. I recommend migrating only one computer the first few times until you're comfortable with the process. In my experience, a team of two people can migrate a group of 30 computers in about an hour (assuming that the computers are close together). You'll have to experiment to see what works for you.

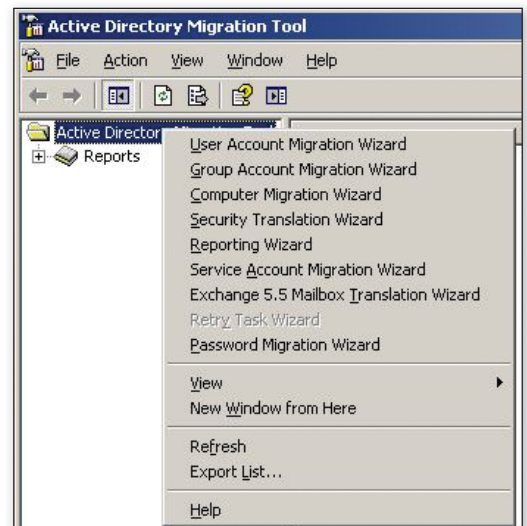


Figure 1: Launching the User Account Migration Wizard from ADMT

6. Select the target OU that the computers will reside in on the new domain. I create a MigratedPC OU to keep track of these machines.

7. Don't select any of the check boxes on the Translate Objects screen. We'll translate the computer's security to the new domain in a separate step.

8. Leave the Replace check box selected for Security Translation Options. Click OK to open the *User Rights Translate in Add Mode Only* dialog box.

9. Choose a value for *Minutes before computer restart after wizard completion*. This setting gives users a warning before their computer is rebooted.

10. Don't exclude any properties on the Group Object wizard page—leave all check boxes cleared.

11. Don't migrate the source object if there's a conflict.

12. Click Finish.

13. Check for and resolve errors on the Migration Progress page by viewing the error log.

Up to this point, migrating computers is very similar to migrating users. However, after the computer object in AD has been copied to the new domain, there's one additional step to complete: The computer needs to be joined to the New.local domain. You can do this manually or you can let ADMT do it for you. After the objects have been copied, click Close

on the Migration Progress window in ADMT, which will bring up the Active Directory Migration Tool Agent Dialog that lets you remotely add multiple computers to the new domain.

14. In the Active Directory Migration Tool Agent Dialog, run the pre-check by clicking Start. The two most common reasons the pre-check fails are firewall and permissions problems.

15. If the pre-check passes, select *Run pre-check and agent operation* and click Start to add the computer to the new domain and reboot it. Be sure that you've communicated with your users so that you don't surprise them.

There's still one more process to run. Before users log on for the first time, run the Security Translation Wizard using ADMT. This wizard updates the security settings on the workstation; any file or folder that was assigned an old\user permission will be changed to new\user. Users' profiles are also translated to the New.local domain. If users log on to a computer before you run the security translation, a new profile is created and all of their settings are left in the old profile. If this happens, don't panic. Simply log on as a user with local administrator privileges, delete the new profile, then run the Security Translation Wizard.

Use the following steps to run the Security Translation Wizard:

1. Right-click Active Directory Migration Tool and choose Security Translation Wizard.
2. Choose *Previously migrated objects*.
3. Enter the source and target domains.
4. Select the computers you just migrated from the new domain. If you created a MigratedPC OU for use in the prior step 6, they'll be easy to find.
5. Select the target OU under the new domain.
6. Leave all of the check boxes *checked* on the Translate Objects page of the wizard.
7. Select the Add option on the Security Translation Options wizard page.



Figure 2: Specifying the source server in the Exchange Server Migration Wizard

8. Don't exclude any properties on the Group Object wizard page—leave all check boxes cleared.

9. Select the *Do not migrate source object if there is a conflict* check box.

10. Click Finish.

11. Wait for the Active Directory Migration Tool Agent Dialog window to open.

12. Choose one computer to migrate for testing purposes and run the pre-check by clicking Start. This can take a minute.

13. If the Pre-check passes, choose *Run pre-check and agent operation*, then click Start.

After all users and their computers have been migrated to the new domain, you can perform the migration of the servers and any associated service accounts. This process is similar to migrating users and computers. ADMT has a Service Account Migration Wizard, but I found it easier to migrate the service accounts like typical users, then manually fix the NT services (e.g., SLQ Server service). If you have a lot of servers with service accounts, using the Service Account Migration Wizard might be worth your time.

Copy the Exchange Mailboxes

Unlike the users' computers and the back-office servers, you don't want to migrate your Exchange servers to the new domain. Modern versions of Exchange are deeply integrated with AD. If you migrated the Exchange organization to the New.local domain, there would be no way for you to connect the mailboxes in the mail store to

the user objects in AD. Instead of migrating Exchange servers, you'll want to copy the individual mailboxes from the old Exchange organization to a new Exchange organization in the New.local domain.

Exchange 2003 and later have a built-in migration wizard that does a great job of copying multiple mailboxes from one Exchange organization to another—even if they're in different AD forests. Here's the simple procedure for copying from one Exchange 2003 organization to another Exchange 2003 organization:

1. Log on to an Exchange server in the New.local domain.
2. Click Start, Microsoft Exchange, Deployment, Migration Wizard.
3. Choose *Migrate from Microsoft Exchange*.
4. Choose the destination server and Information Store where you want the mailboxes to be migrated.
5. Clear the check box for *Exchange 5.5 server*, and enter the information for the source Exchange server. Note that you must enter the administrator account as domain\user, as Figure 2 shows.
6. Specify a date range (if applicable).
7. Choose one or more mailboxes that you want to migrate. You can select all, or select individual mailboxes by using the Ctrl key.

The mailboxes then start to copy from the old domain to the new one. Depending on the size of each user's mailbox, this process can take anywhere from a few minutes to a couple of hours (or even days). I've also noticed a big difference in a defragged Information Store versus a fragmented one. For example, if you take an empty mailbox and send 3,000 messages to it, it will migrate in just a few minutes. However, a well-used mailbox that has 3,000 messages that have been received over the past year will take significantly longer because the messages aren't contiguous (written one after the other) in the Information Store. Other factors such as system and network performance can also greatly affect the speed of the mailbox

copy, so be sure to run a few tests with mailboxes so you'll have an idea of how long this process will take.

Prep and Go

Email is an essential part of business communications, so you'll want to be extra careful when you switch to the new email system. You might be able to kick users out of Outlook long enough to move the mailboxes, but you have no control of the email that will continue to flow to your email gateway. No matter what you do, external messages keep coming. I've seen two methods that work for swapping to the new system.

Queue method. The queue method works best for companies with few users and small Information Stores. Follow these steps to implement this method:

1. Disable email forwarding and let the email queue up on the gateway.
2. Copy the mailboxes from the old Exchange server to the new organization.
3. Enable email forwarding and let email flow to the new email server.

Prep Method. The prep method is best for companies with large Information Stores or with mail gateways that can't hold much email in queue. Here are the steps for this method:

1. Copy the mailboxes from the old Exchange server to the new organization. Use a date range and copy email messages only from today. This step creates a mailbox in the destination email server and configures the user account for email.
2. Point the email gateway to the new server. Internet email now flows to the new server.
3. Run a second email migration, but this time don't specify a date range. This step brings the remaining messages over to the new server, skipping the duplicates.

Public Folders

As I mentioned in Part 1, you can use the Inter-Organization Replication tool (technet.microsoft.com/en-us/library/ee307369.aspx) to migrate public folders

from one Exchange organization to another. Another option is to simply export each public folder to a PST, then import them into the new organization. Whichever method you choose, be sure to allow plenty of time because these migrations can be very slow. Identify which public folders you want to migrate early in the project, and don't put it off until the last minute.

Although messages in mailboxes copy over with little difficulty, the configuration of the SMTP addresses can be a bit more problematic. For example, if you have a shared calendar with a user called ITCalendar and a public folder called ITCalendar, one probably had an SMTP address of ITCalendar.old.com and the other was ITCalendar2.old.com. When you migrate these objects, whichever one gets migrated first gets the address without the number 2. If you migrate the public folder first and the user second, the user and the public folder will both have the wrong SMTP address. When you try to correct the address, Exchange informs you that the address you want is already in use. This situation will no doubt drive you nuts as you try to find where these addresses are used.

To find the rogue address and who or what is using it, use Active Directory Users and Computers to perform a custom search as follows: `proxyAddresses=smtp:ITCalendar.new.com`. Figure 3 shows an example of this custom search.

Point Outlook to the New Exchange Server

When you move Exchange mailboxes within an Exchange organization, Outlook and Exchange communicate in the background

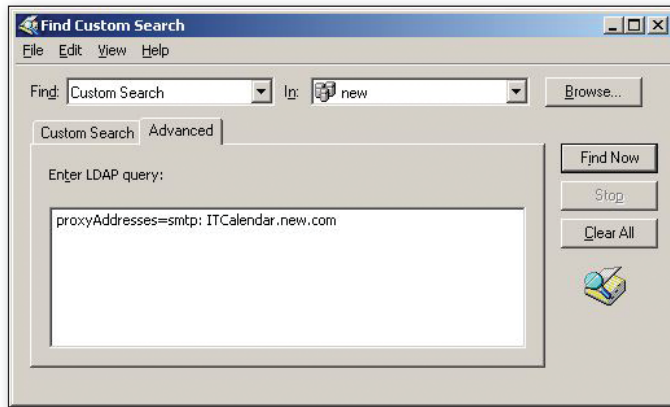


Figure 3: Using Active Directory Users and Computers to find a bad SMTP address after migration

and the users' Outlook profiles are updated automatically. However, when you move mailboxes to a different Exchange organization, Outlook has no way of knowing where the mailboxes were moved to. This is where the Microsoft Exchange Server Exchange Profile Redirector (ExProfRe.exe) comes in. This free, handy utility helps fix your users' Outlook profiles via a logon script.


To use ExProfRe, create a Group Policy Object (GPO) with a logon script. Copy ExProfRe

.exe to the GPO, and create a simple CMD script with the following command:

```
exprofre.exe /targetgc=NEWDC1
/v /n /logfile=c:\UpdateProfile.log
```

Although the code breaks here for space, you would enter it all on one line. You can download ExProfRe from the Microsoft Download Center at www.microsoft.com/downloads/details.aspx?FamilyId=56F45AC3-448F-4CCC-9BD5-B6B52C13B29C. In my experience, ExProfRe is very fast and can change a user's Outlook profile before the user starts Outlook—even if Outlook is in the Start Menu's Startup folder.

A Successful Ending Begins with Planning

A project of this size takes a lot of planning and practice in a lab environment. Document every hiccup that you come across, and write clear, how-to procedure documents that anyone in your IT department could follow. Many of the step-by-step guides in this article are from my own documentation, so I know they work. Set up a lab for yourself and write down everything that you learn. You'll find that a successful migration begins with excellent planning. 

InstantDoc ID 102992



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New Hyper-V Features in Windows Server 2008 R2

Live Migration and Cluster Shared Volumes add high availability

by John Savill

To manage a virtual environment well, you need to be able to move virtual machines (VMs) between virtual servers with no downtime and provide high availability for services that don't natively support high availability. Additionally, you need ways to make virtual environments highly available. For that, you need Failover Clustering. Windows Server 2008 introduced a failover clustering VM service type, which allows Hyper-V VM configuration and lets virtual disk resources be part of a resource group that can be moved between the nodes in the failover cluster. However, Server 2008's Failover Clustering had several challenges, which I explain in depth in the web version of this article at www.windowsitpro.com, InstantDoc ID 102485.

Happily, in Windows Server 2008 R2, both Hyper-V and Failover Clustering have undergone changes that help to support improved high availability in a virtual environment. The goal with Server 2008 R2 is to provide a zero-downtime planned failover. Server 2008 R2's changes address the two challenges with Server 2008 and planned failover:

1. The need to pause the VM to copy its memory to the target node.
2. The need to move LUN ownership from one node to another, which requires a time-consuming dismount and mount operation of the physical disk resource.

Let's take a look at the changes in Server 2008 R2. They can help you get to a zero-downtime planned failover.

Live Migration and Challenge #1: Pausing the VM

To address the first challenge of having to suspend the VM to copy the memory, the Hyper-V team came up with Live Migration, which copies the VM's memory to the target node while it's still running. This sounds very easy, but it's a little more complicated.

We can't just copy the memory of a VM to another node, because as we are copying the memory, the VM is still running and parts of the memory are changing. Although we are copying from memory to memory over very fast networks, it still takes a finite amount of time. We can't just pause the VM while we copy the memory, as that would be an outage. The solution is to take an iterative approach.

The first stage in Live Migration is to copy the VM's configuration and device information from the existing node to the target node. This creates a shell VM on the target node that acts as a container and receives the VM memory and state.

The next stage is the transfer of the VM memory, which is the bulk of the information and which takes up the bulk of the time during a Live Migration. Remember that the VM is still running, so we need a way to track pages of memory that change while we are copying. To this end, the worker process on the current node creates a "dirty bitmap" of memory pages used by the VM and registers

for modify-notifications on the pages of memory used by the VM.

When a memory page is modified, the bitmap of memory is updated to show a page has been modified. After the first pass of the memory copy is complete, all the pages of memory that have been marked "dirty" in the memory map are re-copied to the target. This time only the changed pages are copied, which means fewer pages to copy, and the operation should be much faster. However, once again while we are copying these pages, other memory pages change, and this memory copy process repeats itself.

In an ideal world, with each iteration of memory copy the amount of data to copy will shrink as the time to copy decreases, and we eventually reach a point where all the memory has been copied and we can perform a switch. However, this might not always be the case, which is why there's a limit to the number of memory copy passes that are performed; otherwise the memory copy might just repeat forever.

After the memory pages have all been copied or we have reached the maximum number of copy passes (eight at publication time, but this could change), it's time to switch the VM to execute on the target node. To make this switch we suspend the VM on the source node, transfer any final memory pages that couldn't be copied as part of the

memory transfer phase, then transfer the state of the VM to the target, which includes items such as device and processor state.

We then resume the VM on the target node. An unsolicited ARP reply is sent notifying that the IP address used by the VM has moved to a new location, which enables routing devices to update their tables. It's at this moment that clients now connect to the target node.

You might be wondering which of these actions is done automatically and which requires admin actions. The answer is that all of this is automatic: The only action an admin performs is to initiate a live migration.

Yes, there's a slight suspension of the VM, which is required to copy the state information, but this moment is milliseconds and below the TCP connection timeout threshold. Clients won't disconnect during the live migration process, and users are unlikely to notice anything.

After the migration to the new target is complete, the previous host is notified that it can clean up the VM environment. Figure 1 shows the entire process: A VM container is created on the target, the memory is copied in several phases, then the VM state is transferred, which then allows the VM to start on the target.

So Live Migration allows the migration of the configuration, memory, and state of a VM, with essentially no downtime. Great—

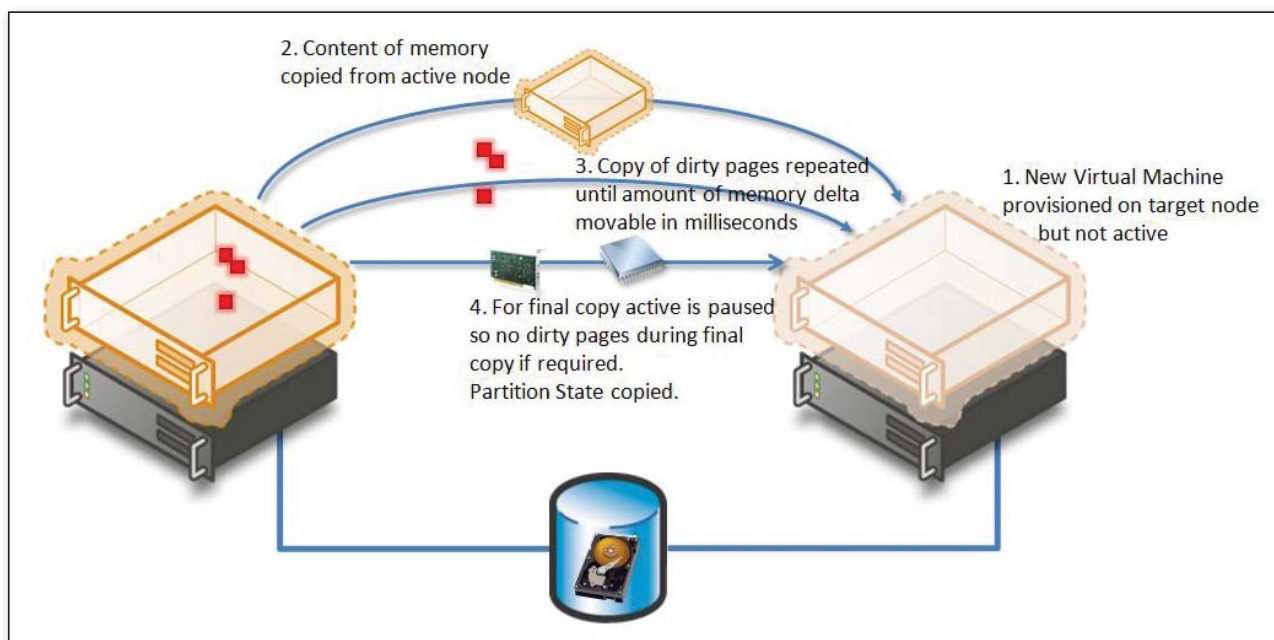


Figure 1: Live Migration process

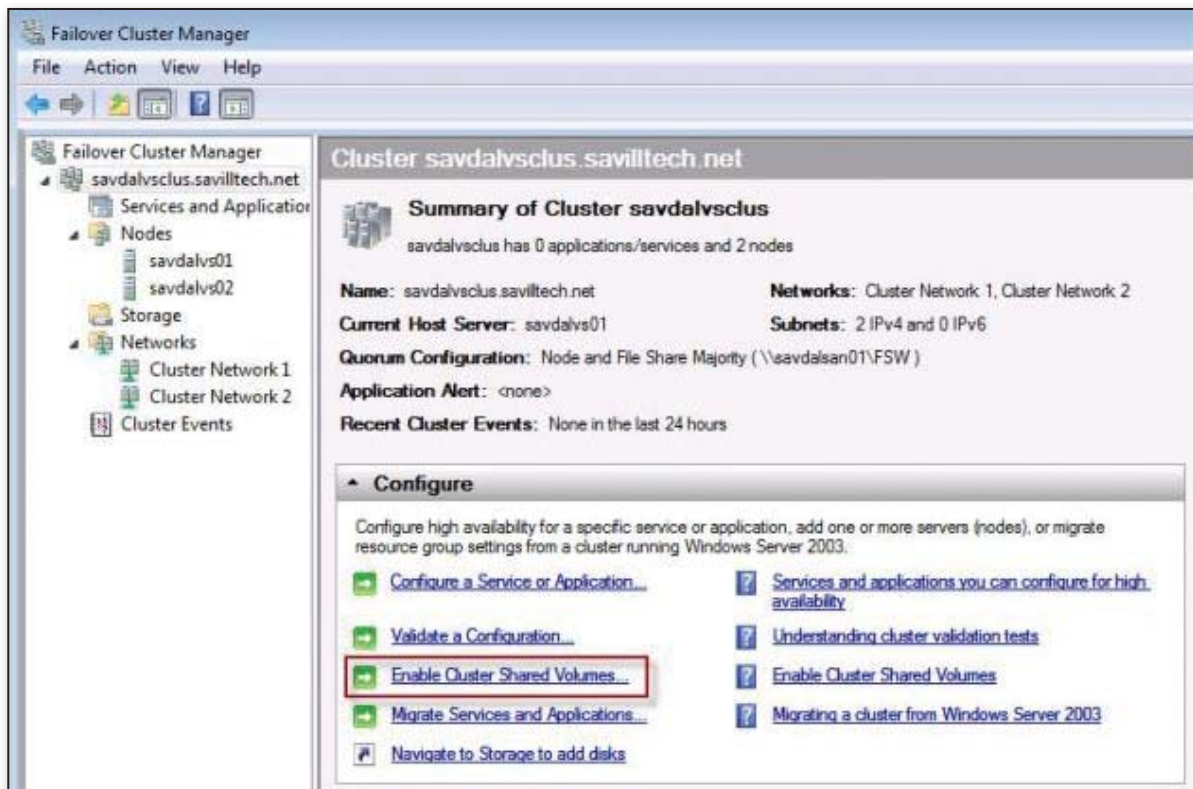


Figure 2: Enabling Cluster Shared Volumes

but that's only one of the two challenges solved. What about the movement of the LUN containing the VM configuration files and VHDs? We need to remove the requirement to move the LUN between nodes in the cluster.

Cluster Shared Volumes and Challenge #2: Moving the LUN

The dismount and mount operations involved in moving the LUN require downtime, which may break the TCP connection timeout window, resulting in client disconnections. The basic problem is that NTFS is a shared-nothing file system and doesn't support multiple OS instances connecting concurrently to it, which is the limitation. (The actual SAN holding the LUNs supports multiple concurrent connections with no problem.)

To make NTFS-formatted LUNs available to multiple nodes in a cluster, concurrently enabling all the nodes to read and write at the same time, Microsoft came up with Cluster Shared Volumes (CSVs), which Figure 2 shows.

How CSVs Work

Each CSV has one node assigned to act as the coordinator node, which has the disk

online locally and has complete access to the disk as a locally mounted device. The other nodes receive a raw sector map of the files of interest to them on each LUN that's part of the CSV. This sector map enables the non-coordinator nodes to perform read and write operations directly to the disk without actually mounting the NTFS volume, a process called direct I/O.

The mechanism that allows direct I/O is a CSV filter that's injected into the file system stack in all nodes in the cluster that receive the sector map from the coordinator node of each CSV disk. The CSV filter lets the non-coordinator nodes directly perform I/O to the disk, which is the most common activity when dealing with VHDs.

However, non-coordinator nodes can't make namespace or metadata changes such as creating, deleting, and resizing files. These operations require management of the NTFS structure, which the coordinator node carefully controls to avoid corruption. Should a non-coordinator node need to perform such an action, it forwards the action over the network to the coordinator node, which then makes the namespace changes on the non-coordinator node's behalf.

The CSV filter actually gives us another great feature. In the event a non-coordinator node loses direct access to the LUN—for example, its iSCSI network connection fails—all of its I/O can be performed over the network via the coordinator node.

This action is known as redirected I/O. Figure 3, page 60, shows a scenario in which a node has lost access to the storage directly and the CSV filter redirects all I/O via the NetFT network. It's a virtual network that binds to one of the physical cluster networks that has been enabled for cluster use; it's the equivalent of the old private network in Windows Server 2003 that was used for internal cluster communications such as heartbeat.

The network that NetFT binds to is based on an automatic metric, which is given to each cluster network; the network with the lowest metric is used by NetFT. In the beta builds of Windows 2008 R2, the default order for Live Migration is based on the same metrics used by NetFT, so whatever network NetFT binds to would be the top network used by Live Migration. This changed in the Release Candidate and the final code, as Microsoft decided it didn't want the NetFT traffic and Live Migration

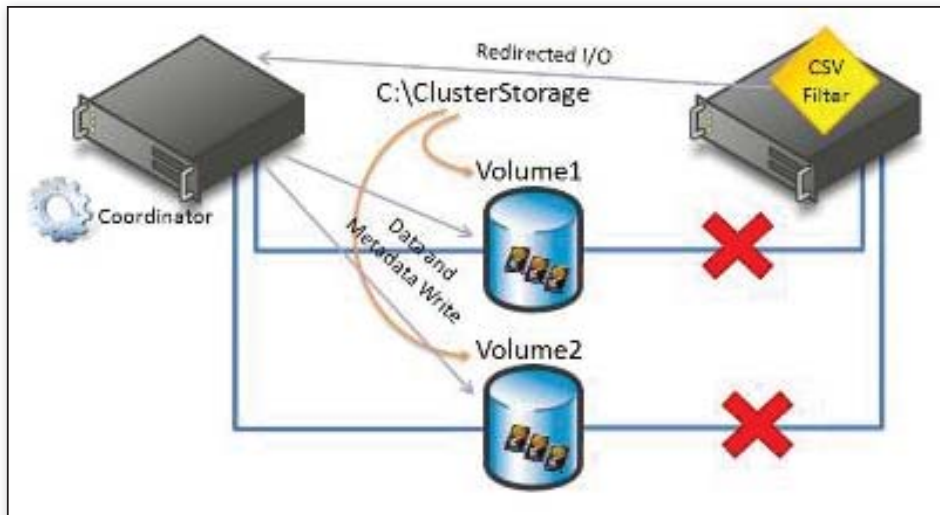


Figure 3: CSV redirect

traffic on the same network due to network traffic conflict. So, by default, the Live Migration traffic is enabled on the network with the second lowest metric.

You should make sure you check the networks you are using for Live Migration in your environment as it's quite possible Live Migration might choose a network you didn't want to use for cluster traffic, such as the iSCSI network. You can change the Live Migration network order and available networks for Live Migration traffic at your discretion. (See Figure 4.)

The actual coordinator node can be changed with minimal impact. There's a slight pause in I/O if you move the coordinator to another node, as the I/O is queued at

each node. However, the pause is unlikely to be noticed, which is crucial given how important the coordinator node is to CSV.

Having multiple nodes directly writing to blocks on the disk can cause some complications, mainly because most utilities don't expect it. When you want to perform a backup or other disk action such as a defragmentation or chkdsk, you need to put the disk in maintenance mode, which disables direct I/O from the other nodes in the cluster and makes them use redirected I/O. This ensures only the coordinator node is accessing the disk, which stops interference with backups and disk operations. The good news is that in the final Server

2008 R2 release, the Failover Cluster Management console exposes the defrag and chkdsk actions and performs all the other preparation tasks for you.

CSV Implications

Currently CSV supports only Hyper-V. In the future, other scenarios for CSV might be added.

By using CSV, we're no longer required to move LUNs between nodes in the cluster during the migration of a VM because the LUN is available to all nodes all the time, solving the mount/dismount problem.

However, CSV is more than part of a zero-downtime VM migration story. Previously we had to maintain multiple LUNs to be able to make the information on them available to different nodes in the cluster. For example, at a minimum, a four-node cluster required four LUNs to be able to move VMs independently of one another. Now, with CSV, the LUNs that are part of cluster storage are available to all nodes, so you don't need separate LUNs. This lets you share your free space among all VMs on a LUN and makes the configuration validation wizard faster, since it has to test fewer LUNs.

A Great High Availability Story

After trying for a long time to break Hyper-V, I can honestly say it works well. And Live Migration and Cluster Shared Volumes together offer a great high availability story with Hyper-V. For those of us using the standalone Hyper-V Server, the great news is that Hyper-V Server 2008 R2 is built on the Enterprise Edition of Server 2008 R2 Server Core, which means the free virtualization platform has clustering support—we get Live Migration and CSV for nothing!

InstantDoc ID 102485

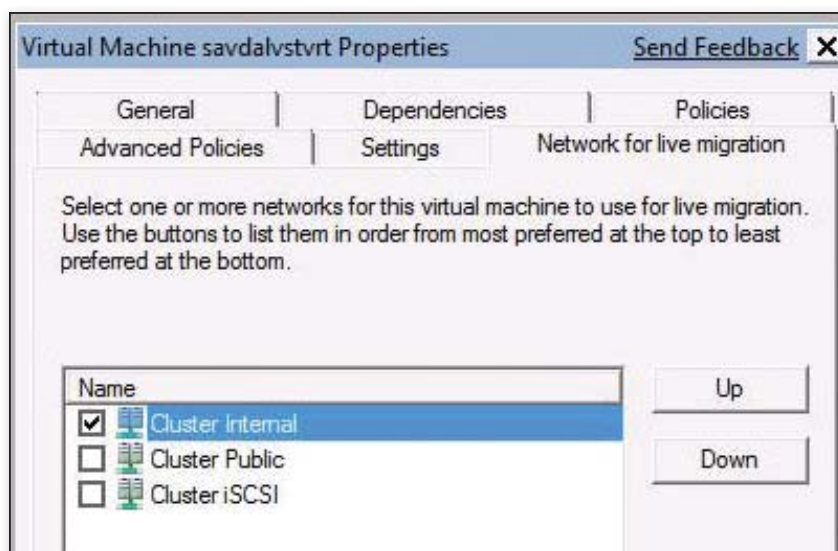


Figure 4: Live Migration traffic sent over the Cluster Internal network



John Savill

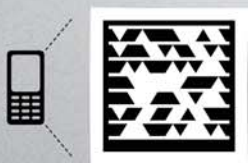
(john@savilltech.com) is an advisory architect for EMC's Microsoft consulting practice. He's an MCITP: Enterprise Administrator for Windows Server 2008 and a 10-time MVP. His latest book is *The Complete Guide to Windows Server 2008* (Addison-Wesley).



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Monitor Windows Server with Performance Counters



When you want your servers to perform at their best, Windows Server's built-in performance monitoring and analysis tools offer insight into potential areas for improvement by letting you monitor current performance information and log this information over time. However, you must understand the core hardware performance factors of any server (i.e., Windows servers, Linux servers) to use the tools effectively.

The four key server hardware components that can be altered to improve performance are the CPU, memory, hard disks, and network interface card (NIC). Three of these components are internal (i.e., CPU, memory, hard disks) and the fourth component is the gateway to the network. Internal server performance determines whether the full NIC capabilities can be utilized, and NIC performance determines whether a well-performing internal system matters. As you can see, all four components are important and depend on one another.

In this article, I'll cover these four areas of system performance and explain how to monitor them in Windows Server environments. First, I'll explore how systems thinking helps you understand how these components affect one another. Then I'll discuss the performance counters available in Windows as they relate to the four hardware components. I'll also provide some recommendations for improving the performance of your system based on the results of performance monitoring.

Systems Thinking and Creating a Baseline

As you monitor and analyze Windows Server performance, it's essential to employ systems thinking, which requires you to consider the relationships among the hardware components. For example, if CPU utilization is high, the CPU isn't automatically seen as the problem. Instead, memory and hard disk utilization should be considered. Is the system using an excessive amount of virtual memory? If that's the

Measure four key server hardware components against your baselines

by Tom Carpenter

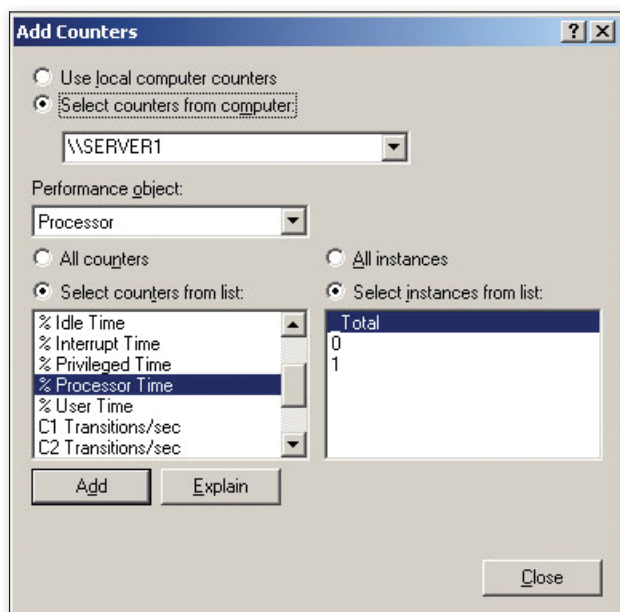


Figure 1: Option to monitor all CPUs or specific CPUs

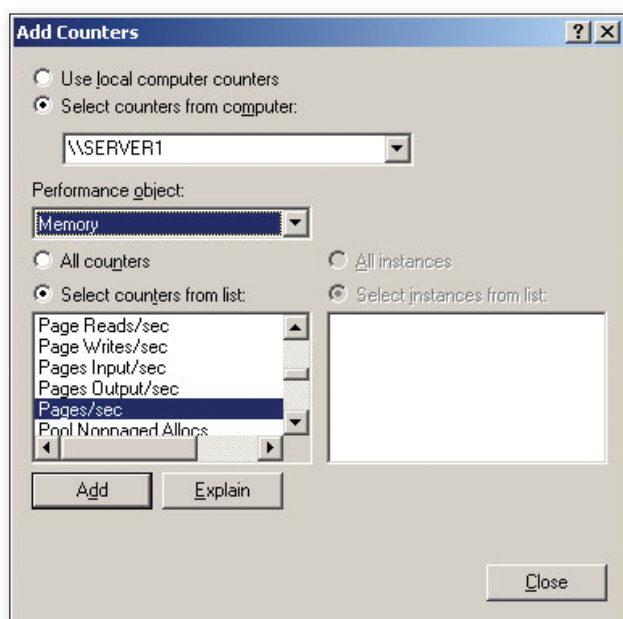


Figure 2: Selecting memory counters in the Memory object

case, CPU utilization might be a symptom of a memory problem rather than evidence of an insufficient CPU speed.

I've performed analysis on hundreds of Windows servers and with all of this experience I've learned one important general guideline: faster CPUs don't always solve performance problems. It's tempting to throw more speed at the problem, but remember the old saying: If a man is lost in a city and he drives faster, he just gets lost faster. You could rephrase this saying for server performance tuning and say that a faster processor just

functions between 9 A.M. and 5 P.M., I'll monitor during that entire time. Once you've created the performance log, you can open it in the Performance tool and narrow the viewing window to peak utilization times. If the server performed acceptably during peak utilization, you know that the server is well configured for your intended use.

As time goes by, the server is more heavily utilized in most implementations. Users become more familiar with the system and more productive, meaning they do things faster and place more demands on the server.

loops faster while it's waiting for the true bottleneck to finish working.

When analyzing the performance of a Windows server, you should analyze all four core components at the same time. Systems thinking indicates that you're considering the system as a whole and not just evaluating a single component. Using the systems thinking process will enable you to locate the true performance bottleneck more quickly.

Before I begin exploring the performance counters, let me explain the need for a baseline. A performance baseline provides a representation of the system's performance during acceptable operations. You can create a performance baseline by monitoring and logging performance counters during a period of normal operations. I prefer to monitor for an entire work window; for example,

Additionally, more users are often added to the system. All of these factors can result in a poor-performing system. You can create a new performance log and compare it with the original baseline to locate problem areas. As the counters are discussed in the following sections, remember to consider their use in and against a baseline rather than as simple point-in-time measurements.

CPU Counters

The Reliability and Performance Monitor in Windows Server 2008 and the Performance tool (sometimes called System Monitor, but displayed simply as Performance) in Windows Server 2003 R2 and earlier provide several important counters related to the four core components. The key CPU counters are listed under the Processor and Process objects. My favorite Processor counters are the % Processor Time counter, the % User Time counter, and the % Privileged Time counter. These three counters are available in the Processor object and can be monitored for all CPUs or specific CPUs, as shown in Figure 1. They're also available in the Process object and can be monitored for all processes or individual processes.

If you notice that the % Processor Time counter is high in the Processor object, you might want to monitor it in the Process object for each individual process. Doing so will give you insight into which processes are monopolizing the processor's time. You might choose to offload some of the processes to a different server or you might even be able to stop running some processes. It's amazing how many unused processes often run on Windows servers and even these unused processes can impact performance as the Windows kernel must still manage them. Examples of unused processes include startup applications that aren't used, services that are unneeded, and optional application components that run as separate processes.

The % Processor Time counter is inclusive of both user mode and kernel mode OS functions. It's technically a measurement of the time in which the System Idle Process isn't running. The System Idle Process runs only when no other process is seeking processor time. I usually look for average % Processor Time values greater than 65-70 percent before I'm concerned about the processor.

The % User Time and % Privileged Time counters let you monitor user mode and kernel mode activities independently. These counters can help you to determine whether a bottleneck is occurring within an application or within the OS. However, it's important to remember the architecture of the Windows OS. Most actions are performed in kernel mode, so it's not uncommon to see 70 percent or more of the activity occurring within kernel or privileged mode.

Memory Counters

The most valuable memory counters for general server analysis are located in the Memory object, which is shown in Figure 2. The memory counters that I find most useful are the Available Kbytes counter and the Pages/sec counter. The Available Kbytes counter measures values that sit between Available Bytes and Available Mbytes. The level of detail provided by tracking kilobytes is better than the limited detail of megabytes and the overwhelming detail of bytes.

The Pages/sec counter is used to track the number of virtual memory pages read or written per second. On most systems, a 4KB memory page is used, so you can multiply the Pages/sec value times 4 to calculate the kilobytes passing to or from the virtual memory file each second, which will give you a better understanding of just how much data is moved from RAM to the disk each second.

Hard Disk Counters

The hard disk counters are divided into two objects: LogicalDisk and PhysicalDisk. The counters are very similar and the difference is in the way the disks are referenced. LogicalDisk references the disk by the drive letter and PhysicalDisk references the disk by the drive number (e.g., drive 0). Both objects show the same information for a

selected counter. However, if you want to monitor disk activity for all partitions on a disk, you'll need to use the PhysicalDisk object. The key counters to watch are Average Disk Queue Length, Disk bytes/sec, and Free Megabytes.

The Average Disk Queue Length counter can reveal whether the drive is keeping up with the demand of running processes. The most frequently cited threshold is two items in the queue. If the average is greater than 2, a drive bottleneck might be occurring. This counter should also be compared to the baseline. If the baseline shows an average of 2.3 items in the disk queue and performance was perceived as acceptable, there's no reason to suggest that performance is unacceptable—at a later time—if the average is the same or lower. Remember, performance is measurable with statistics, but whether performance is “good” or “bad” is a relative issue.

The Disk bytes/sec counter can reveal whether the drive is living up to expectations. Many drives are rated at a certain speed, but they perform at lower speeds. This counter can reveal such behavior. In many cases, updating drive controller drivers might resolve such performance problems.

Free Megabytes isn't really a performance counter, but it's very useful in predicting future needs. For example, if you measure the free megabytes for each volume once per month, you can determine consumption rates. With consumption rates documented, you can predict when you'll need to archive old data or upgrade to larger hard disk drives.

Network Interface Counters

The final counters are the network counters. These counters are found in the Network Interface object. The two key network counters are Bytes Total/sec and Output Queue Length. The Bytes Total/sec counter should be compared to the baseline. If this amount has increased dramatically, it could mean the server is more heavily utilized than it was when the baseline was captured; however, it could also be a sign of a network attack or the need to offload some processes. The Output Queue Length counter might help you decide. If this counter is averaging more than 2, it indicates that the network card (or the data rate of the infrastructure) isn't able to handle the capabilities provided by the server. Stated differently, the server is throwing data at

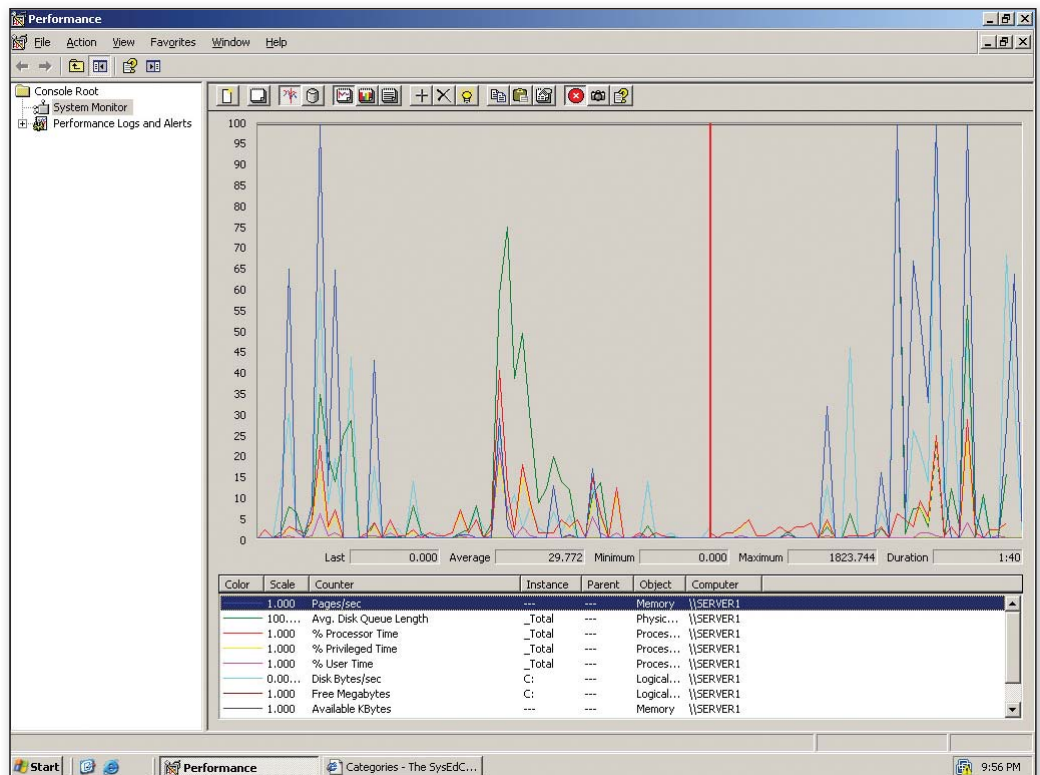


Figure 3: The Performance tool after loading counters

■ MONITOR WINDOWS SERVER PERFORMANCE

the NIC faster than the NIC can transmit it out on the wire.

Capturing Counters

Now that I've discussed the 10 most important counters that help you track the core performance factors in your server, let's look at the process used to capture these counters. Use the following instructions to load these counters into the Performance tool in Windows 2003 R2 or Windows 2003:

1. Launch the Performance tool by clicking Start, All Programs, Administrative Tools, Performance. You'll see that the Pages/sec, Avg. Disk Queue Length, and % Processor Time counters are already loaded.

2. Click the button with the plus sign icon (or press Ctrl+I) to add more counters.

3. The Processor object is selected by default. With this object selected, click the % Privileged Time counter in the *Select counters from list* section and then click Add.

4. Next, select the % User Time counter, and click Add.

5. Select the LogicalDisk object and add the Disk bytes/sec and Free Megabytes counters by performing steps 3 and 4 again.

6. Select the Memory object and add Available KBytes.

7. Finally, select the Network Interface object and add the Bytes Total/sec and Output Queue Length counters.

After selecting the counters and clicking OK, you should see graphs similar to Figure 3, page 67. By default the counters are monitored automatically and will continue to be monitored until you stop the process. You might have more or less activity on your server depending on current operations. Loading the performance counters into the Performance tool lets you monitor live activity. Monitoring live activity is just one way to use this powerful performance tool. In addition, you must create a performance log if you want to create a baseline. Use the following instructions to create a

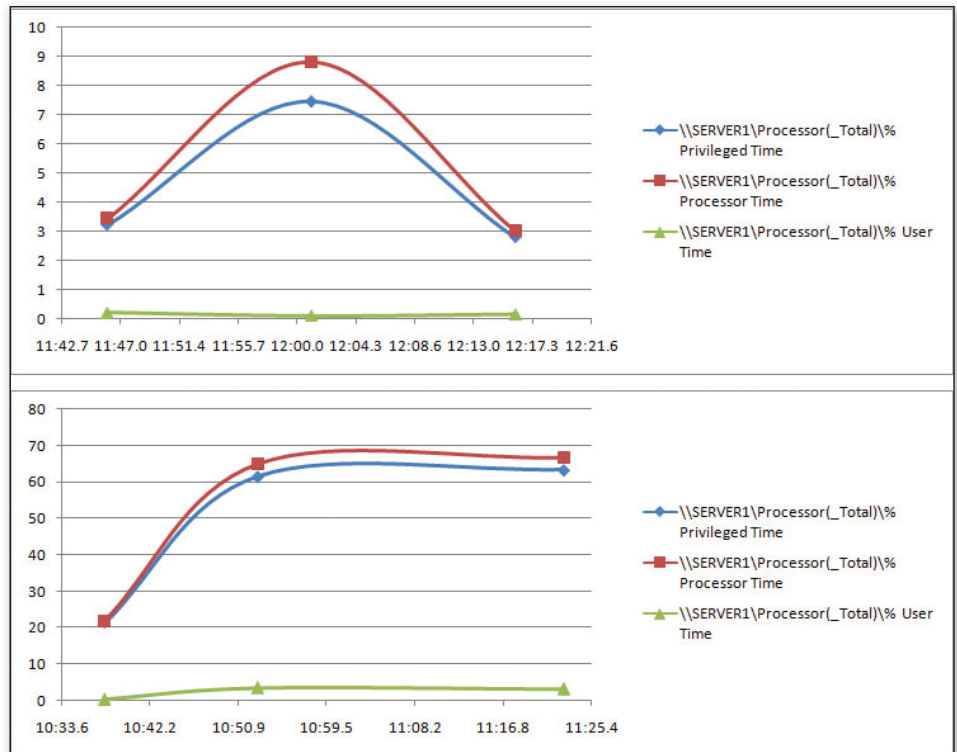


Figure 4: Results of the log files created in the Performance tool

log that will capture performance data for any length of time:

1. Launch the Performance tool as previously described.
2. Expand the Performance Logs and Alerts node in the left pane.
3. Right-click Counter Logs and select New Log Settings.
4. Enter a name for the log, such as Baseline 1.
5. Click the Add Counters button on the General tab and add the counters you want to log.
6. Select the Log Files tab, then select the log file format you prefer. (I prefer the comma delimited text file so that I can analyze the data easily in Microsoft Excel.)
7. On the Schedule tab, schedule a start and stop time for the log or set it to start manually. Note that you can run a command after the log is created.
8. Click OK.
9. If you're prompted to create the log directory, click Yes.

You now have a performance log configuration. If you created the log configuration with the 10 counters covered in this article, you have an excellent configuration for creating baselines. Use this log to capture

a baseline of your server's performance when it's performing well. Then, when users inform you that it's not performing well, you can run the log again and compare the two log files. Figure 4 shows two graphs generated in Excel 2007 from comma-separated value (CSV) log files created in the Performance tool.

Measuring Hardware Performance

The Performance tool provides counters that can be used to measure the performance of hardware against recommendations or baselines. Capturing the right counters is the key to success with this tool. It's also important to know that new counters are added every time you install a major Microsoft application (e.g., Microsoft SQL Server, Microsoft Exchange Server, Microsoft IIS).

InstantDoc ID 102951



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EXCHANGE 2010:

High Availability

WITH DAGs

by Tony Redmond

Take a close look at the new log replication architecture that provides built-in resilience to your organization

Because email is a mission-critical application, Microsoft has invested a lot of engineering talent as well as money over the years to provide Microsoft Exchange Server with the ability to resist different types of failure and deliver a highly available service. Exchange Server 2007 was a watershed for high availability in many ways because of the introduction of log replication technology in local continuous replication (LCR), cluster continuous replication (CCR), and standby continuous replication (SCR). Now Exchange Server 2010 takes a new approach to high availability by introducing the Database Availability Group (DAG), which is based on many of these same log replication techniques.

However, working with DAGs introduces new concepts, design challenges, and operational concerns that administrators have to understand before bringing a DAG into production. This article covers the underlying concept and explains Microsoft's motivation for the introduction of DAGs in Exchange 2010. A future article from Paul Robichaux will discuss how to build your first DAG.

High Availability Goals for Exchange 2010

Microsoft's first goal with the Exchange 2010 availability story was to improve on the Exchange 2007 high-availability features. The Exchange 2007 implementation is a little immature and overly complex. Having three different types of log replication is confusing, and the lack of automatic failovers and the lack of a GUI to control end-to-end operations from creation to failover are the hallmarks of a V1.0 implementation.

These limitations aside, the basic technology involved all works: copying transaction logs from a source to a target server, validating their content, then replaying that content to update passive copies of databases. Microsoft's decision to focus on continuous log replication as the basis for high availability in Exchange 2010 is understandable, and the developers have delivered a more manageable and complete solution. Exchange 2010 doesn't support LCR, CCR, and SCR, but as we'll see, the DAG is more than an adequate replacement.

Microsoft's second development goal was to include sufficient functionality in Exchange 2010 to let customers build highly available infrastructures without having to invest in expensive third-party add-on products. Although there's no doubt that third-party technology boasts its own set of useful availability features, especially when coupled with high-end storage systems, Microsoft has a large and diverse Exchange customer base, not all of which can afford to invest in the financial and administrative cost of deploying add-on technology. Having a solid set of high-availability features built in to the product and administered through the standard management interfaces—Exchange Management Console (EMC) and Exchange Management Shell (EMS)—increases the attractive-

■ EXCHANGE 2010 DAGS

ness of Exchange as a platform, removes complexity, and avoids cost for customers in the small-to-mid-sized business (SMB) segment as well as for a large number of enterprise customers.

Finally, Microsoft wanted to let customers deploy highly available servers in an incremental nature. In previous versions of Exchange, you have to do a considerable amount of preparation to deploy a highly available solution. For example, if you want to deploy clustered Exchange servers, you have to ensure that suitable hardware is available, then install a Windows cluster, then install Exchange with the correct switches to create virtual Exchange servers running on the cluster and connected to cluster resources such as shared storage. This process isn't something that you do without planning.

The concept of incremental deployment as implemented in Exchange 2010 is that you can deploy typical Exchange Mailbox servers first, then decide to include those servers in a DAG as the need arises to incorporate more high availability into the environment. You can also gradually expand the DAG to include more servers or more database copies to add resilience

against different failure scenarios as time, money, and hardware allows.

Microsoft introduced storage groups as the basis for database management in Exchange 2000. Databases fitted inside storage groups, which belonged to servers. All the databases in a storage group shared a common set of transaction logs, and transactions from all the databases in the storage group were intermixed in the logs. Storage groups were sometimes convenient, but eventually Microsoft determined that they introduced an extra layer of complication for administrators, and the process to remove storage groups from the product began in Exchange 2007. It therefore comes as no surprise that storage groups disappear in Exchange 2010.

Defining a DAG

Fundamentally, a DAG is a collection of databases and database copies that are shared across as many as sixteen servers. The DAG differentiates between a primary database—the one that you originally create and users currently connect to—and the copies that you subsequently create on other servers. The DAG can swap the database copies into place to become the

primary database following a failure of the primary database. The failure might be a complete server failure that renders all of the databases on the server inaccessible or a storage failure that affects just one database. In either case, the DAG is capable of detecting the failure and taking the necessary action to bring appropriate database copies online to restore service to users.

Servers within a DAG can support other roles, but each server must have the Mailbox role installed because it has to be able to host a mailbox database. Servers can also be on different subnets and span different Active Directory (AD) sites as long as sufficient bandwidth is available. Microsoft recommends that all servers in a DAG share a network with a round-trip latency of 250 milliseconds or less. An Exchange 2010 server running the Enterprise edition can support as many as 50 active databases but the Standard edition is limited to 5 databases. When you include passive database copies that a server hosts for other servers, this number is increased to as many as 100 total databases on the Enterprise edition.

The introduction of the DAG smashes the link between a database and the owning server to make portable databases the

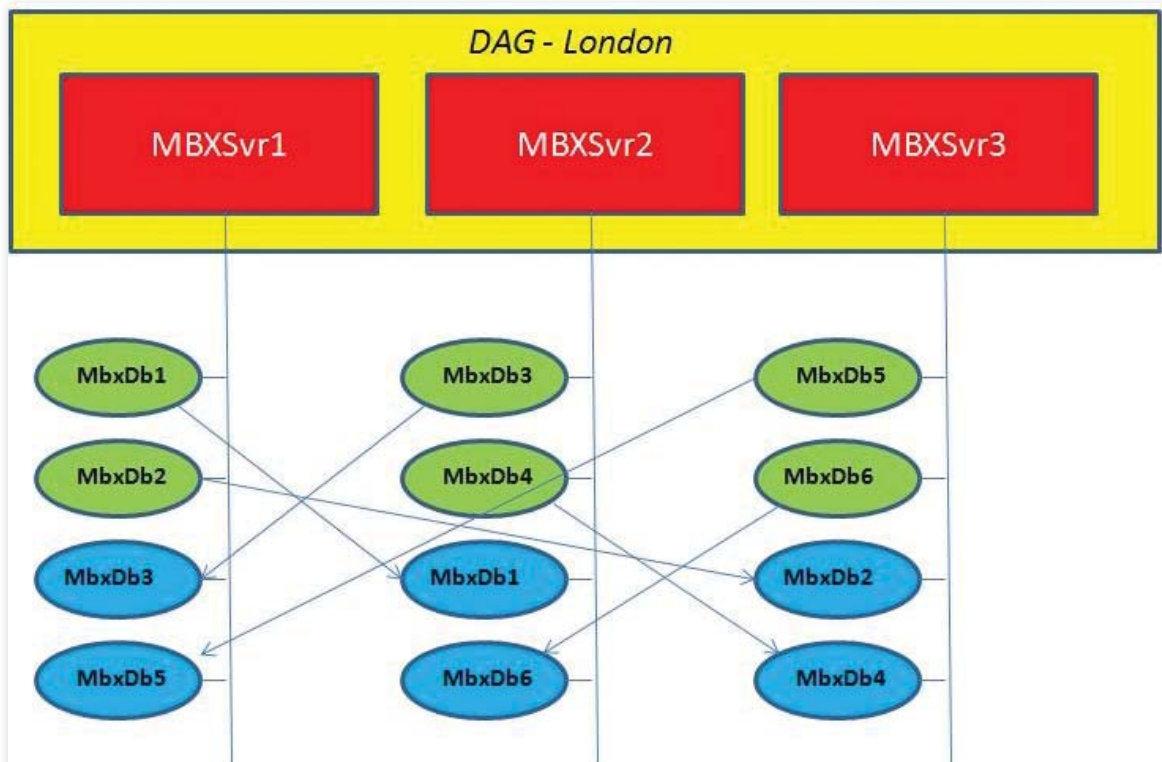


Figure1: A sample DAG architecture

Learning Path

WINDOWS IT PRO RESOURCES

For more articles about Exchange 2010:

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"Q. Is SAN storage supported in Microsoft Exchange Server 2010?" InstantDoc ID 102217

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"Q. What's the inbox archive solution in Exchange 2010?" InstantDoc ID 102175

"Q. What are the sizing recommendations for Exchange 2010?" InstantDoc ID 102855

basic building block for high availability in Exchange 2010. This development is probably the most fundamental architectural change Microsoft has made in Exchange 2010.

Windows Clustering

Underneath the hood, the DAG uses Windows failover cluster technology to manage server membership within the DAG, to monitor server heartbeats to know what servers in the DAG are healthy, and to maintain a quorum. The big differences here from clustering as implemented in other versions of Exchange are that there's no concept of an Exchange virtual machine or a clustered mailbox server, nor are there any cluster resources allocated to Exchange apart from an IP address and network name. Another important management difference is that you never need to manage cluster nodes, the network, or storage resources using the Windows cluster management tools because everything is managed through Exchange.

The dependency on Windows clustering means that you can add Mailbox servers to a DAG only if they're running on Exchange 2010 Enterprise Edition on Windows 2008

(SP2 or R2) Enterprise Edition. It also means that all of the DAG member servers must be part of the same domain. You should also run the same version of the OS on all the DAG member servers; you definitely can't mix Windows 2008 SP2 and Windows 2008 R2 within the same DAG and it makes good sense to keep all the servers in the organization at the same software level.

Transaction Log Replication

Within the DAG, Exchange maintains the copies of the databases through a process of log replication. Transaction logs generated on the active server are copied by the Microsoft Exchange Replication service (MSEExchangeRepl) running on each of the servers that maintain passive mailbox database copies, where the logs are validated and then replayed to update the passive copies. The DAG is the boundary of data replication for transaction logs. In other words, you can't replicate logs to a server in a different DAG and have Exchange replay the logs into a database replica there. It then follows that before you can create a copy of a database, it must reside in a DAG, and the target server must be part of the same DAG.

Figure 1 shows an example of a DAG containing three servers, each hosting two databases. Each of the databases is replicated to one other server to provide a basic level of robustness to a server outage. If server 1 fails, thus halting service to databases 1 and 2, the Active Manager process, which I'll discuss shortly, reroutes user connections to pick up the copies of the databases on servers 2 and 3. Users connected to database 1 are redirected to server 2 and users connected to database 2 go to server 3. Similarly, if the disk holding database 2 on server 1 fails, Active Manager detects the problem and reroutes traffic to server 3.

In Figure 1, each database has just one copy. You might decide that the probability that more than one server will ever fail at the same time is negligible, so it's sufficient to rely on the single additional copy. However, if the DAG extended across more than one data center, you would probably configure every database to replicate to all servers. In this scenario, copies of databases 1 and 2 would be present on server 3 so that if servers 1 and 2 were both unavailable, users could still get to their data by using the copies hosted on server 3.

The number of copies you can create for an individual database is limited only by the number of available servers in the DAG, disk space, and available bandwidth. The high capacity bandwidth available within a data center means that disk space is likely to be the biggest problem. This issue is somewhat negated by the ability to deploy databases on low-cost drives, providing there is sufficient rack space, power, and cooling within the data center to support the disks.

As an example, you could have an environment with 15 servers in a DAG. There are 110 active databases, each with 2 passive copies, for a total of 330 databases in the environment. The databases and copies are distributed evenly across all servers so that each server supports 22 databases. Some of these databases are active and supporting users; others are copies replaying transactions from primary databases. Each server has 18TB of storage. Having three copies of each database is a reasonable approach to ensuring high resilience against a wide range of failures, but don't forget to plan your design so that a failure that affects a rack can't prevent service to a database. In other words, you shouldn't deploy a rack that contains all the servers that host an active database and all of its passive copies.

Active Manager

Active Manager is a new component that runs as part of the replication service process on every server within a DAG. Active Manager is the orchestrator for Exchange 2010 high availability; it decides which database copies are active and which are passive—this happens automatically and doesn't require administrative input. However, administrators can dictate the preferred order of activation for database copies and dictate that some copies are never activated.

Active Manager runs on all servers within a DAG. One server in the DAG is the primary active manager (PAM), and all others are in a standby active manager (SAM) role. Whether in PAM or SAM mode, servers continually monitor databases at both the Information Store and Extensible Storage Engine (ESE) levels to be able to detect failures. When a failure is detected, a server asks the PAM to perform a failover. The server that hosts the PAM issues the request if it's still online, but if it's offline,

another server seizes the role to become the PAM and brings database copies online.

The PAM owns the cluster quorum resource for the default cluster group that underpins the DAG. The PAM is responsible for processing topology changes that occur within the DAG and making decisions about how to react to server failures, such as deciding to perform an automatic transition of a passive copy of a database to become active because the server that currently hosts the active copy is unavailable for one reason or another. When a new database copy has been successfully mounted, the PAM updates the RPC Client Access service with details of the server that hosts the newly activated copy so that client connections can be directed to the correct server.

Automatic Database Transitions

The replication service monitors database health to ensure that active databases are properly mounted and available and that ESE has signaled no I/O or corruption errors on a server. If an error is detected, the replication service notifies Active Manager, which begins the process of selecting the best possible available copy, then makes that copy active to take the place of the failed database.

To make its choice, Active Manager creates a sorted list of available copies. It ignores servers that are unreachable or those where activation is temporarily blocked. The list is sorted by how current databases are to avoid data loss. When the list is available, Active Manager applies a set of criteria to make the final determination, applying each set of criteria until a database is selected. Up to twelve different checks are performed to locate the best possible database copy. If more than one database meets the same criteria, the Activation Preference value is used to break the tie and make the final selection.

The Activation Preference is a numeric property of a database copy that administrators use to control the order in which Exchange activates copies. For example, if a database fails and there are two copies, one with activation preference of 2 and the other with activation preference of 3, Exchange activates the copy with the lower activation preference, 2. This decision assumes that both copies are healthy (they've been replicating and replaying transaction logs to keep the database up-to-date); Exchange never

activates an unhealthy database if a healthy copy is available.

An automatic failover can't occur if no database copy is considered satisfactory. If that happens, the administrator has to take action to either fix the problem with the original database or to bring one of the database copies to a state where it matches the required criteria.

After Active Manager determines the best copy to activate, it instructs the replication service on that server to attempt to copy any missing transaction logs from available sources. Assuming that all transaction logs can be retrieved, the Store on the selected server can mount the database with no data loss and then accept client connections. If some logs are missing, the Store applies the `AutoDatabaseMountDial` setting to decide whether to mount the database. `AutoDatabaseMountDial` is a property of a Mailbox server that you can manipulate with the `Set-MailboxServer` cmdlet. The default value is `BestAvailability`, meaning that a database can mount if up to 12 transaction logs are missing.

An administrator can mount a database that can't be mounted automatically by Active Manager. For example, Exchange won't activate a database copy if its content index isn't up to date. You can force Exchange to activate the copy with the `Move-ActiveMailboxDatabase` cmdlet. In this instance, you'd specify the `-SkipClientExperience` parameter to tell Exchange that it was OK to ignore the context index. The developers' choice of "SkipClientExperience" for the parameter reflects their view that having a content index available is important to deliver the full client experience. However, when a database is down, most administrators want to restore basic mailbox connectivity immediately and worry about slow or incomplete searches due to an out-of-date content index afterward.

As soon as the RPC Client Access layer is aware of the transition, it begins to redirect clients to the newly activated database. Client response to a transition is dependent on the client platform and version. Microsoft Office Outlook clients working in Cached Exchange Mode issue a notification that they have lost connectivity and then reconnect when the database is back online. Outlook 2010 is slightly different; it suppresses messages about lost connectivity for what

are regarded as trivial reasons such as a network glitch, so you see a notification only when connectivity is reestablished.

Following a successful database mount, the Store requests the transport dumpster to recover any messages that were in transit. Active Manager also notifies the RPC Client Access service that a different copy of the database is now active so that it can begin to reroute client connections to that database.

When the fault is repaired on the original server and it comes back online, its copy of the database is passive and is obviously outdated compared with the other copies. The Store runs through a divergence detection process, then performs an incremental reseed to bring the database up-to-date. The first step is to determine the divergence point, which is done by comparing the transaction logs on the server with the logs on a server that hosts a current copy. The Store works out which database pages have changed after the divergence point, then requests copies of the changed pages from an up-to-date copy. These pages are replayed back until the repaired copy is synchronized with the other copies. The goal is to have all of this work happen and restore service to users within 30 seconds. The repaired database remains as a passive copy until the administrator decides to make it the primary copy again.

Big Promise from DAGs

There's no doubt that the introduction of the DAG in Exchange 2010 is big news. It's a fundamental change in the architecture of the Information Store and it lets administrators who might not have considered implementing highly available Exchange organizations revisit the topic because high availability is now baked into Exchange. The question is how effective the promise proves to be in production. We'll know the answer only after we see various DAG designs at work, the operational issues they provoke, and how they survive the inevitable failures that occur during deployments.

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PROTECT YOUR PowerShell Scripts

When running scripts in Windows PowerShell, an important security consideration that you should take into account is how to prevent unauthorized scripts from running on your system. By default, you can't run scripts in PowerShell. However, scripts provide an effective tool in Windows administration, so if you're using PowerShell, chances are you'll want to run scripts.

A PowerShell script is simply a text file with a .ps1 extension. The file contains one or more PowerShell statements that run when you call the script file at the console. PowerShell lets you control whether scripts can run, and if so, which scripts can run. To control script execution and to help protect your system, you need to

1. Set PowerShell's execution policy.
2. Create an X.509 certificate.
3. Digitally sign your scripts.

If you take these precautions, only the scripts that you digitally sign will be permitted to run in PowerShell, thus helping to prevent malicious attacks on your system. Note that I assume you're already familiar with the PowerShell environment. If you're new to PowerShell, see the PowerShell 101 and PowerShell 201 series. For information about these series, go to "New to Scripting? Check Out These Series" (www.windowsitpro.com, Instant-Doc ID 102942).

Setting the Execution Policy

The PowerShell execution policy controls whether you can run scripts and whether configuration files will be loaded when you start PowerShell. To set the execution policy, you must use the Set-ExecutionPolicy cmdlet to specify one of the following execution options:

Three precautions is all it takes

by Robert Sheldon

Table 1: Makecert Options Used in the Examples	
Option	Description
-n	Name of the certificate authority or certificate
-eku	Enhanced key usage object identifier
-r	Self-signing certificate
-sv	Subject's private key file and certificate file
-ss	Certificate store
-a	Signature algorithm (can be MD5 or SHA1)
-pe	Permits the private key to be exported
-iv	Issuer's private key file (the file specified in the certificate authority)
-ic	Issuer's certificate file (the file specified in the certificate authority)

- **Restricted:** PowerShell configuration files won't be loaded and scripts won't run. This is the most restrictive option and is the default. As a result, when you first install PowerShell, no unintended scripts will run or configurations will load. However, you can still run individual commands in the PowerShell console.
- **AllSigned:** All scripts and configuration files must be digitally signed by a trusted publisher. To sign a script, you must use a code-signing certificate. As you'll see later, you can create the certificate yourself.
- **RemoteSigned:** All scripts and configuration files downloaded from the Internet must be digitally signed. However, scripts on your local computer can run and local configuration files can be loaded without being digitally signed.
- **Unrestricted:** All scripts will run and all configuration files will be loaded. This is the least restrictive option and subsequently the riskiest.

As you can see, if you want to protect your system and still allow scripts to run and configuration files to load, you should set the execution policy to AllSigned. To set the policy, run the following command at the Power-

Shell command prompt: Set-ExecutionPolicy AllSigned

You can verify PowerShell's current execution policy (always a good idea after changing the policy) by running the Get-ExecutionPolicy cmdlet (without any parameters). For more details about the Set-ExecutionPolicy and Get-ExecutionPolicy cmdlets, see the PowerShell Help files available for each cmdlet. For information about configuration (i.e., profile) files, see "Save Your PowerShell Code in Profile and Script Files" (June 2009, InstantDoc ID 101718) and the MSDN article "Windows PowerShell Profiles" (msdn.microsoft.com/en-us/library/bb613488(VS.85).aspx).

Creating an X.509 Certificate

After you set the execution policy to AllSigned, you must sign your files, which

means you need a code-signing X.509 certificate. X.509 is a cryptography standard that defines the format for such security-related devices as public key certificates and certificate revocations lists. You can either purchase an X.509 certificate issued by a public certificate authority or you can create your own certificate authority and certificate. A full discussion of the X.509 standard and public certificate authorities is beyond the scope of this article. However, I'll explain how you can create your own local certificate authority and certificate.

To create a certificate authority and certificate on the local computer, you can use the Makecert utility that's included in the Microsoft .NET Framework SDK. (It's also available in Microsoft Visual Studio 2008 or Visual Studio 2005.) Note, however, that Makecert is meant for testing only. In a production environment, you should use a public key infrastructure (PKI) such as Microsoft Certificate Services to create certificate authorities and certificates.

As with any command-line utility, you can run Makecert at the PowerShell command prompt. For instance, when you create the certificate authority (which you must do before you create the certificate), you specify the name of the utility (Makecert) followed by the necessary options. In the following example, I create a certificate authority named *PowerShell CA* in the certificate store root:

```
makecert -n
"CN=PowerShell CA" -
-eku
1.3.6.1.5.5.7.3.3 -r '
-sv PowerShellCA.pvk
PowerShellCA.cer '
-ss Root -a sha1
```

This command includes a number of options. Table 1 provides a brief description of them. You can find detailed

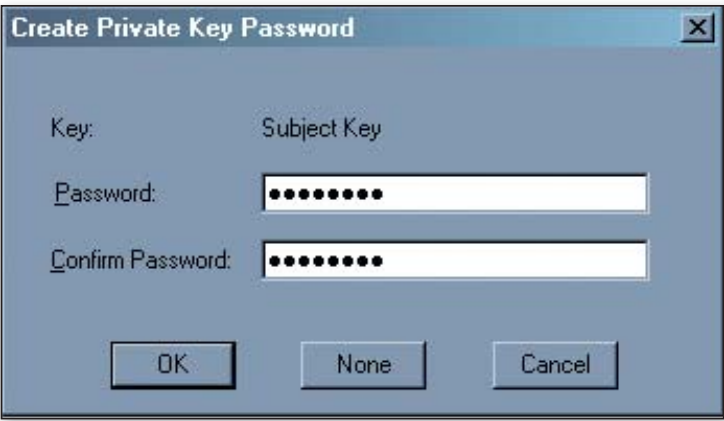


Figure 1: The Create Private Key Password dialog box



Figure 2: The Enter Private Key Password dialog box



Figure 3: The Security Warning message box

information about these and other options in MSDN's .NET Framework Development Center ([msdn.microsoft.com/en-us/library/bfskty3\(VS.80\).aspx](http://msdn.microsoft.com/en-us/library/bfskty3(VS.80).aspx)). Note that, to run the command in this example, I added the path where the Makecert utility is located to the Path system environmental variable.

When you run this command, the Create Private Key Password dialog box appears (shown in Figure 1), prompting you to specify a password. After you enter your password twice and click OK, the Enter Private Key Password dialog box appears (shown in Figure 2), prompting you for the password you just entered in the Create Private Key Password dialog box. After you click OK, a Security Warning message box appears (similar to the one shown in Figure 3), warning you that you are about to install the PowerShell CA certificate authority. After you click Yes, the Makecert utility creates the certificate authority in your local certificate store.

After the certificate authority has been created, the next step is to use the Makecert utility to create the actual certificate that will be used to sign your scripts. The following command creates a certificate named *PowerShell Certificate*, which is authorized by the PowerShell CA certificate authority:

```
makecert -n "CN=PowerShell
Certificate" '
-eku 1.3.6.1.5.5.7.3.3
-pe '
-iv PowerShellCA.pvk '
-ic PowerShellCA.cer -ss
My -a sha1
```

As with the previous command, this command includes several Makecert options. Table 1 also includes a description of these options. Note that, for the *-ss* option (which specifies the certificate store), I provided the value *My* rather than *Root*, as I did when creating the certificate authority. The *My* value indicates that the certificate will be stored in the certificate store in the Personal folder of the Current User store. (The Current User store is used by default. You can also specify *-sr LocalMachine* to save the certificate to the Local Computer certificate store.)

When you run the Makecert command to create the certificate, you're once again prompted for a password. This is your private key password that you specified when you created the certificate authority. The certificate is then created in the current user's Trusted Root Certification Authorities store.

You can view the certificate through the Microsoft Management Console (MMC)

Certificates snap-in, as shown in Figure 4. Notice that PowerShell Certificate is listed in the right pane of the MMC window. To view the details about the certificate, double-click it to open the Certificate dialog box. If the Certificates snap-in isn't available in an existing administrative tool, you'll have to add it to an MMC console. For information on how to do so, see the Microsoft article "How To Create Custom MMC Snap-in Tools Using Micro-

soft Management Console" (support.microsoft.com/kb/230263). After you verify that the certificate has been created, you can start signing your scripts.

Signing a PowerShell Script

Signing a script is a straightforward process. You use the Set-AuthenticodeSignature cmdlet and specify the script file to sign and the code-signing certificate to use when signing the file. For example, suppose you want to sign the *C:\Audit\SecurityAudit.ps1* script file, which callout A in Listing 1, page 76, shows. (To download SecurityAudit.ps1, go to www.windowsitpro.com, enter 102831 in the InstantDoc ID box, click Go, then click the *Download the Code Here* button.) This script retrieves the most recent 20 events listed in the Security log. The following statements first specify the script file and certificate, then run the Set-AuthenticodeSignature cmdlet:

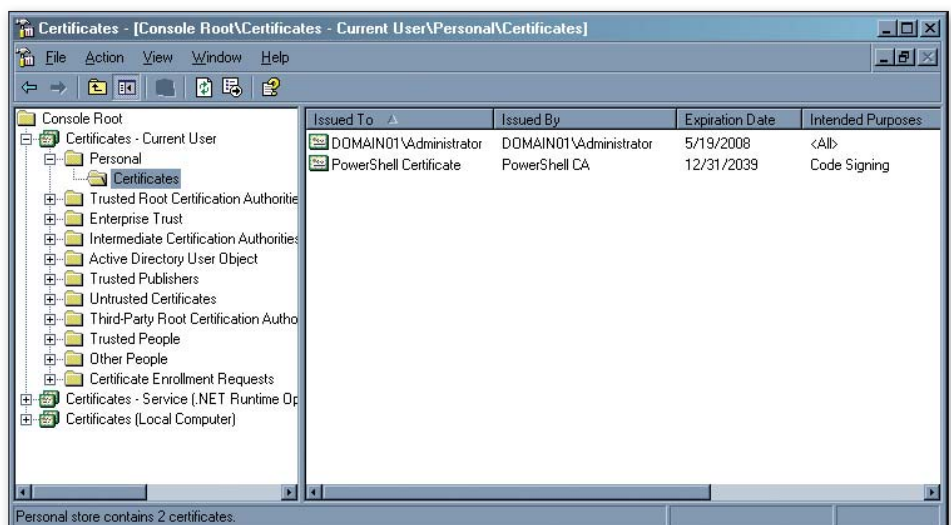


Figure 4: The MMC Certificates snap-in

■ PROTECT YOUR SCRIPTS

```
$file = "C:\Audit\  
SecurityAudit.ps1"  
$cert = Get-ChildItem  
cert:\CurrentUser\My '  
-CodeSigningCert  
Set-AuthenticodeSignature  
$file $cert
```

In the first statement, I assign the full filename as a string to the `$file` variable. In the second statement, I use the `Get-ChildItem` cmdlet to retrieve the code-signing certificate from the certificate store and assign it to the `$cert` variable. To retrieve the certificate, I specify as a path `cert:\CurrentUser\My`. The `cert:` prefix is the drive used to access the certificate store. This is followed by `CurrentUser`, which refers to the location within the certificate store. The `My` refers to the certificates within the Personal folder. When you use the `Get-ChildItem` cmdlet to retrieve the certificate, you should also include the `-CodeSigningCert` switch parameter to retrieve only the certificates that have code-signing authority.

If the `My` certificate store contains more than one code-signing certificate, the `$cert` variable will contain those certificates, in which case you must specify the desired certificate when you reference the `$cert` variable. One way to do this is to add the object index after the variable name. For example, you'd use `$cert[0]` to call the first code-signing certificate, `$cert[1]` to call the second one, and so on. However, if you know that there is only one code-signing certificate, you don't need to include the bracketed index reference.

After you have set the values of the `$file` and `$cert` variables, you're ready to sign your code. The third statement in the example uses the `Set-AuthenticodeSignature` cmdlet to sign the code. Notice that you provide the filename (`$file`) and certificate (`$cert`) as the two arguments to the cmdlet. When you run the command, the certificate is used to digitally sign the file. You can verify that a file has been signed by viewing its contents. At the end of the file, you'll find a block of commented code that is the digital signa-

Listing 1: Signing the `SecurityAudit.ps1` Script File

```
(A) $events = Get-EventLog Security -Newest 20 |  
sort -Property EntryType, Index  
Foreach ($event in $events)  
{  
    $event.Index.ToString() + " - " +  
    $event.TimeGenerated + " - " +  
    $event.EntryType  
    Write-Host  
}  
(B) # SIG # Begin signature block  
# MIID/gYJKoZIhvcNAQcCoIID7zCCA+sCAQExCzAJBgUrDgMCGgUAMGkGCisGAQQB  
# gjcCAQSGWzBZMDQGCisGAQQBggjCAR4WJgIDAQAABAFzDtgWUsITrck0sYpfvNR  
# AgEAAgEAAgEAAgEAAgEAMCEwCQYFKw4DAhoFAAQUfuB/MNI2X1L7Kdw/G0iGyxaw  
# bHigggICMIICGCCCAWgAwIBAgIQs7M2bbLob59IMgMEJ4KiDjAJBgUrDgMCHQUA  
# MBxqFjAUBGNVBAWVbVd2YyU2h1bGwGQ0EwHhNCMDgwNTE2MTYzMDU2WhcNMzKx  
# MjMxMjM1OTU5WjAhMR8wHQYDQDExQZb3d1c1NoZWxsIENlcnRpZm1jYXR1MIGf  
# MA0GCCSgSiB3DQEBAAQAA4GNADCBiQKBgQDb1zprG3GPB/8xmPAEy5LyxdYw+V4w  
# Z5B57LVaSqvemioQofhsPLZAisRxnKJnqu6QiKe00NlnioJJAHE3aZBY7meRi87N  
# 5ALYtrv4RwsQ73U4qbQdcyE8f8we9076wG0uYEHUJGDIr1WwexXZFCBg7fk8z1M  
# efa1v+gnjJdVuQIDAQAB02IwYDATBgNVHUEDDAKBgrBgEFBQCDAzBjBGNVHQEE  
# QjBAGBDBhKU0QbIB3f6Y3aWwYebXi0RowGDewMBQGA1UEAxMNUG93ZXJTaGVsbCB0D  
# QYIQBoWGo48PJtNANxyw/17nDAJBgUrDgMCHQUAA4GBAIVPeuaJDCI5PTc0Q8Iv  
# Md+aJwg9I01w8U9E1oUD6gRFGXowUYN9Hx0WHj0wRKn8WYyPGShWYpSmUxv0po39  
# vQv/8vUkud9Q+bCRbk+1ov/fygrQ9xmJoFRA14H/WCQ2GyuFH8kP7ZNj81az9Aa1  
# dMfrtVIVVTr0Sb03TwKjZmxHMYIBTDCCAUgCAQEWLDAYMYwFAYDvQDQEW1Qb3d1  
# c1NoZWxsIENBAhCzsZtsuhvn0gyAwQnqoIMAKGBSs0AwIaBQCgeDAYBgorBgEE  
# AYI3AgEMMQowCKACgAChAaOAMBKGCsGSIb3DQEJAZEMBgorBgEEAYI3AgEEMBWG  
# CIsGAQQBggjCAQsxdJAMBgorBgEEAYI3AgEVMCMGCSqSIsb3DQEJBDewBBQNBhAb  
# I8NF5HESNfIBsX6S00DaTANBgkqhkiG9w0BAQEFAASBgJjaY7cGezbKswhg2+jr  
# f60RTRw38vVIFC4x7XoTn18SK522trIsEMXet5GujSGqjvC6+ftwubhi2FT0st3h  
# JSTEYasknzZRe75HaEESsFY9ruqQcdHmaopPyi70v9xq/BMGAqh1NDqAeLQIXS5  
# kRG1V8SX/UgKHnv2otc3r0e  
# SIG # End signature block
```

certificates in the certification path, delete the private key, and export extended properties. You'll also need to provide a password and the file location. For these examples, I saved the file to `C:\Audit\PS_Cert.pfx`. After you export the certificate, delete it from the certificate store and store the `.pfx` file in a secure location.


After you run the wizard, you're ready to sign the file. As before, the first two statements should define the necessary variables, as in

```
$file = "C:\Audit\  
SecurityAudit.ps1"  
$cert = Get-  
PfxCertificate C:\Audit\  
PS_Cert.pfx
```

In the first statement, I assign the script file's location to the `$file` variable. Next, I use the `Get-PfxCertificate` cmdlet to retrieve the `.pfx` file and save it in `$cert`.

When you run the second statement, you'll be prompted for a password. This is the password you specified when you exported the certificate to the file. As before, use the `Set-AuthenticodeSignature` cmdlet to sign the file. When you run the cmdlet, specify the script and `.pfx` files, as in

```
Set-AuthenticodeSignature $file $cert
```

That's all there is to signing your file. As you can see, once you've created your certificate and, optionally, exported it to the `.pfx` file, it's a simple matter to sign the files, yet an effective way to help secure your system. As any administrator knows, you can never be too careful, especially when it comes to protecting your PowerShell scripts. 

InstantDoc ID 102831

ture. Callout B in Listing 1 shows what this signature might look like. After the file has been signed, you can run the script.

When you run a script that's been digitally signed, you'll be prompted to verify whether it's safe to run it. You can choose to never run the file, not run it this time, run it once, or always run it. If you chose to never run the file or always run the file, you won't be prompted again if you try to run the script.

Using a .pfx File to Sign a Script

If you use a private certificate to sign your files, it's still possible for a malicious program to use the certificate to sign a script, thus allowing an unwanted script to run. A way to help avoid this problem and provide even further protection for your system is to export your code-signing certificate to a `.pfx` file, then use that file to sign your script.

To export your certificate, open the Certificates snap-in and locate your certificate (refer back to Figure 4). Right-click the code-signing certificate, point to All Tasks, then point to Export. This launches the Certificate Export wizard. Follow the steps in the wizard to export the file. Be sure to export the private key along with the certificate and enable strong protection. You can also choose whether to include all



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PREPARING FOR SharePoint 2010

Upgrade your environment
now to get ahead of the
game by Joel Oleson

Many IT professionals are looking toward next year with excitement, anxiously anticipating the release of SharePoint Server 2010 and wondering what they can do now to prepare. Although many details about SharePoint 2010 haven't yet been revealed, the SharePoint product team has provided guidance on several items to help organizations plan for the upgrade. In addition, SharePoint Server 2007 SP2 includes tools that offer additional insight and configuration information.

Pre-Upgrade

You can take several measures to prepare your environment for SharePoint 2010 before its release.

System requirements. Servers running SharePoint 2010 will require 64-bit Windows Server 2008 R2 or 64-bit Windows Server 2008. (Microsoft announced more than a year ago that SharePoint 2007 and Windows SharePoint Services—WSS—3.0 would be the last versions to support 32-bit Windows.) Although most rack-mounted servers produced in the past few years are 64-bit capable, most current installations run on Windows Server 2003 in 32-bit mode, which is insufficient for SharePoint 2010; you must run 64-bit Server 2008 in your production environment. Environments running 32-bit hardware will require upgrades. In addition, because Microsoft Virtual Server and VMware's Virtual Desktop Infrastructure (VDI) both support only 32-bit images, you'll need Windows Server 2008 Hyper-V or alternative virtualization software to host 64-bit images.

SharePoint SP2 or later. One of the first things you can do to prepare for SharePoint 2010 is upgrade your current installation to the latest service pack. Upgrading to SP2 or one of the newer cumulative updates will help prepare for SharePoint 2010. SP2 includes:

- **PreUpgradeCheck**—This key STSADM command provides guidance about upgrade requirements and determines whether an upgrade will fail, without making any changes to the current environment. The command is built on the best practices analyzer and is the best free tool available to help you under-

stand the current state of your environment. I discuss the Pre-UpgradeCheck command in more detail later in the article.

- **Read-only databases**—Read-only databases provide uptime flexibility for both build-to-build and version-to-version upgrades. Providing read-only databases to users while other databases are being updated gives users access to data during the upgrade.
- **Parallel upgrades**—In the past, databases had to be upgraded serially; only one database per server could be upgraded at a time. Although some companies used more hardware to overcome this limitation, you now can upgrade many databases simultaneously, dramatically increasing the speed of build-to-build or version-to-version upgrades.
- **EnumAllWebs**—This command provides the entire site collection and information hierarchy of your environment. The XML output can be used either as a site map or for inventory.
- **DeleteSite and Deleteweb**—These STSADM commands are enhanced in SP2 to include the force command to remove problematic site collections and webs. Use the stsadm -o deletesite -force command to remove orphaned sites and webs.
- **VariationFixTool**—You can use EnumAllWebs to obtain the globally unique identifier (GUID) for sites with variation issues. The VariationFixTool command in STSADM lets you repair sites with variations that are out of sync.

SQL Server. For performance reasons, SharePoint 2010 requires a 64-bit OS and hardware for your web infrastructure, as well as for SQL Server. It also requires SQL Server 2008 or 2005. SQL Express 2008 and 2005 are free alternatives, but their lack of management tools makes issue identification difficult. SQL Server 2008 Standard or Enterprise Edition offers the best scalability, performance, and manageability. The edition you use will depend on your high availability, mirroring, and database encryption needs.

Internet browser. SharePoint 2010 won't support Internet Explorer (IE) 6.0. Instead, you'll have to use a standards-based browser such as IE 8.0, IE 7.0, or Firefox 3.x to author content. SharePoint 2010 will also

offer an increased level of compatibility with Firefox 3.x and Safari 3.x on non-Windows OSs. This move is a big win for corporations with mixed environments; in addition, it means a richer editing and design experience. If you're planning to upgrade to SharePoint 2010, you'll want to upgrade to a standards-based browser now, rather than continuing to design pages with IE 6.0.

Client desktops. Before deploying SharePoint 2010, you should evaluate your entire environment's desktop requirements. Organizations that still run Office 2003 and Windows XP should consider upgrading to Office 2010 and Windows 7. Office 2010 provides the best innovations yet for Office applications, as well as the richest SharePoint integration. Microsoft Worldwide Partner Conference attendees gave Windows 7 a 90 percent approval rating, and I agree: It's the best OS ever, offering security, compatibility, and stability. It also has fewer hardware requirements than Windows Vista, so many organizations will be able to squeeze another year or two out of their existing hardware while enjoying increased productivity without additional expense.

You also should seriously consider Office SharePoint Workspace, for its improved user experience and attractive licensing options. Although not all users will need Office SharePoint Designer 2010, its designer standards-based desktop might increase adoption and provide tools for those who do need them.

SharePoint 2010 will include Office Web Applications, which are "light" versions of Office applications that are available directly from the cloud, as a subscription service. Office Web Applications will reduce the cost of upgrading Office applications but still provide users with the features they need to be productive.

Mac desktops. You should update your Macintosh desktops to Office 2008 for Mac SP2. This version of Office provides Mac integration with Office and SharePoint; specifically, it includes the new Document Connection for Mac tool, which lets users save and open documents on SharePoint 2007 and Microsoft Office Live Workspace. This enhancement improves the editing experience and integrates the Mac desktop experience with SharePoint and Live Workspace. In addition, Office Live is now compatible with Apple's Safari 4 web browser.

Developer desktops. The ultimate Share-

Point developer desktop is 64-bit with 8GB of RAM running Visual Studio 2010 with solid state disks (SSDs). Sound like a dream? Although it might take some serious planning to get your developers running with the latest and greatest technologies, SharePoint 2010's 64-bit requirements will help you justify this expenditure in your development budget. If your remote development includes virtual environments, you'll also need to consider Server 2008 Hyper-V (with a host that supports 64-bit).

Even if you can't upgrade to the ultimate SharePoint development environment immediately, you can specify that future developer desktop purchases include 64-bit hardware, as well as additional RAM to support virtual images and to provide the necessary overhead to run the server. Additional RAM means speed—which leads to faster development and better productivity. SSDs likewise provide the necessary speed and performance for increased developer productivity.

PreUpgradeCheck

Running the PreUpgradeCheck STSADM command runs rules that will help you determine how to prepare to upgrade.

Running the command. The prescan .exe tool is different from PreUpgradeCheck because it makes changes in the content database to show that a site is checked and ready for upgrading. The upgrade itself will fail if the command hasn't been run. Microsoft paid attention to users' feedback about this issue, and PreUpgradeCheck doesn't perform any write operations—it's strictly read-only.

Running the STSADM -o preupgradecheck command with the default settings uses the rules and definitions in either WssPreUpgradeCheck.xml (for WSS 3.0) or both WssPreUpgradeCheck.xml and OssPreUpgradeCheck.xml (for SharePoint 2007 environments). These XML files provide their products' rules for out-of-the-box configuration. Settings include options for processing alternative rules files.

Understanding the output. When you run the PreUpgradeCheck command, you'll notice the word "Passed" in green text for processed rules such as OSPerequisite; these items receive a pass or fail based on the version of Windows Server installed. The yellow "Information Only" sections call

your attention to information you need to be aware of during an upgrade, such as Large-List, where configuration and complexity information about the farm are detailed.

If you run PreUpgradeCheck and see "Failed" in bright red text next to items that need to be corrected before upgrade, this result means the farm contains a custom site definition but SiteDefinition is missing from the XML configuration file. You'll need to address the identified issues, upgrade to 64-bit Server 2008, and rerun the check with the new configuration file.

The output of PreUpgradeCheck isn't just what you see in the simple command output. An Extensible Style Language (XML) file lets you create custom reports for comparison/analysis. An additional web-based HTM report includes a full log of detailed information about each check performed. You can open this report in IE or Firefox. The rich HTM file includes the real meat of PreUpgradeCheck. Two main categories of content are provided: information and configuration, and customizations and dependencies.

Examples of PreUpgradeCheck information and configuration content include:

- Content sources and start addresses
- Topology +(SSPs), WSS search topology
- Servers (not including SQL Server)
- Upgrade types
- List of alternative access mappings
- Large lists
- Language packs

Examples of PreUpgradeCheck customization and dependency content include:

- Sites based on custom site definitions
- Sites based on site template
- Features in use (including missing features)
- Installed language packs
- Features
- Custom list views and custom field types, web.config entries
- Content and site orphans
- Custom web parts
- Custom XML-based Collaborative Application Markup Language (CAML) views
- Custom XML CAML content types

Local server mode. In addition to running PreUpgradeCheck in the default mode to determine farm customizations, you can also run the check in local server mode, which

runs a smaller set of rules from the given server. In large server farms, you can run the command in local mode for each server, as well as for the whole farm. You can then compare the reports and identify any differences in configuration and customizations.

I recommend running PreUpgradeCheck early and often because the insight it provides is useful not only for upgrades but also as a best practice and for configuration analysis. PreUpgradeCheck doesn't stop running when it finds an issue, so you can run the command even if you know you have custom site definitions that will generate a failure notice. Because the command is read-only, it provides information without making changes.

Info Architecture and Data Cleanup


The more optimized your environment, the smoother and faster your upgrade will be. To improve the upgrade process, trim the following content that is simply taking up space and would slow down the upgrade:

- Remove unused sites and site collections

- Remove orphaned sites, lists, and objects identified by PreUpgradeCheck
- Remove locks and increase the quotas for sites that are at or near maximum capacity
- Remove or add missing features and web part assemblies (check dependencies) identified by PreUpgradeCheck

Cleanup also can involve working through and resetting pages and sites back to the site definition, or finalizing previous upgrades. Also be sure to consider the supportability of your customizations and address any improper development, testing environments, or resources. Now is the time to package up the various assemblies and features and build them into solutions that can be deployed easily and consistently. This cleanup can take the form of simply packaging up the code and some of the configuration, or writing scripts for some of it and documenting the rest. When it comes time to actually upgrade, you'll be glad you took the time to perform this cleanup.

Get Started

You can take several steps now to optimize your environment for upgrading to SharePoint 2010. First, ensure that you have 64-bit hardware capable of hosting your production sites on Server 2008 Hyper-V. As soon as possible, upgrade to SharePoint 2007 SP2 or later. Discuss Office 2010 with your desktop team, including the possibility of using Office Web Applications. Run the PreUpgradeCheck tool, and assess any issues that might hinder an upgrade. Finally, reevaluate and clean up your information architecture. If you communicate about and plan ahead for an upgrade to SharePoint 2010, the process will go much more quickly and smoothly. 

InstantDoc ID 102967



Joel Oleson

is a senior product architect and SharePoint evangelist at Quest Software. He maintains a SharePoint blog at www.sharepointjoel.com. Previously, Joel worked for Microsoft and designed the first global SharePoint deployment.

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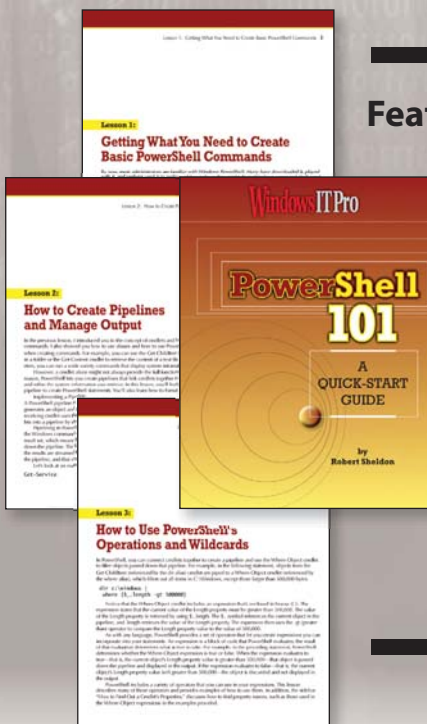
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INSIGHTS FROM THE INDUSTRY

Email Security and Data Loss

Email security gets a lot of attention. You know you need spam filters on your Microsoft Exchange Server organization, and if those filters don't work well, you're going to hear all kinds of complaints from end users. You know you need virus and malware protection to save your network from the ridiculous mistakes those same users are likely to make. You've probably spent a great deal of time finding and fine-tuning the solutions that provide this protection to your network. But have you spent an equal amount of time thinking about outbound security threats from email and other sources?

Some companies certainly have. That's a key takeaway from the recent survey by Proofpoint, "Outbound Email and Data Loss Prevention in Today's Enterprise, 2009." In addition to outbound email, the survey also questions respondents about concerns for data loss related to mobile devices, blogs and message boards, social media and media sharing sites, and other technologies. Overall, more than half the respondents said they were "concerned" or "very concerned" about losing data through these various outlets.

This year's survey also looks at how economic factors are affecting security concerns about data loss. Layoffs can lead to security problems at any time, but when layoffs strike the IT department, which is already working on a super-tight budget, potential for significant problems arise. I spoke with Keith Crosley, director of market development for Proofpoint and author of the annual survey since it began in 2004.

"IT departments have got to be mindful of this," Crosley said. "You've got to limit access to accounts as soon as possible when a termination is occurring." Overall, more than 17 percent of companies investigated data loss around an employee leaving the company during the last year; in the largest companies (over 20,000 employees), the number rises to 32.2 percent.

When I think of data loss, what comes to mind are the movies or books I've read about corporate espionage and all the outrageous shenanigans that go into such stories. And I suppose there might be some grain of truth in those stories. However, as Crosley said, "The vast majority of data breaches or potential data breaches are completely inadvertent, and they often relate to employees simply trying to do their jobs." Crosley describes the problem as a cultural issue: We're so conditioned to using email for communications that we don't necessarily realize when we're breaking the rules.

One story Crosley tells to highlight this point is that of nurses or other medical personnel inadvertently breaking HIPAA regulations by sending confidential patient information through email. The intent is simply to pass along shift notes when it's time to go home. Although it might be convenient for two individuals to communicate through Gmail if they're not otherwise going to cross paths, the security of such communication is simply not adequate. The moral here is the need for better education: Make sure you have corporate policies in

place governing appropriate email use, and make sure your employees know what the rules are.

Something I found a bit surprising from the survey is the number of companies that have dedicated staff monitoring outbound email. Almost a third (32.9%) of the companies in the survey reported having "staff whose primary or exclusive job function is to read or otherwise analyze outbound email content." Wow. These companies must have—or think they have—a significant problem if they're willing to pay people just to perform this function. Or maybe it's just a proactive attempt to avoid litigation from giving out credit card numbers or private medical information.

"I don't think that companies of any significant size can afford to be without a technology approach to scanning outbound email because you can't solve these problems manually," Crosley said. "You can't, after the fact, do a random sampling of outbound email content and go, 'Look, we're regularly leaking credit card data.' That's not helpful." Of course, Proofpoint offers email security and data loss prevention products both as on-premises and hosted solutions.

The Proofpoint survey has some interesting statistics about social media sites, Short Message Service (SMS—i.e., texting, Twitter), as well as the types of data companies fear is being lost and the actions taken against employees for violating the rules. You can download the full report from Proofpoint's website if you want to see the bigger picture of data loss potential in the enterprise. And you can see Keith Crosley give a brief presentation with some more quick stats in the video below.

—B.K. Winstead

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LinkedIn: IT Pro Friend or Foe?

LinkedIn, sometimes called the “Facebook for business,” is a social networking site that allows you to post your resume, work experience, skills, and more on a free profile. But LinkedIn is more than a static profile page—this site lets you form connections, like Facebook friends, with people you know or work with. From there, LinkedIn also “links” you to your connections’ connections, quickly creating a massive network of people that you are connected to by one, two, or three degrees of separation. I’ll give you an example: on my LinkedIn account, I only have a meager 48 connections; however, if you count all of my connections’ first connections, I have 2,400 people. And if you count

presence on LinkedIn with your employment information listed is enough to receive notices from recruiters.

But what if you don’t have any interest in leaving your job? Well, even so, keeping abreast of who’s hiring, what skills employers are looking for, and what the going salary for a given position in a given region is are all valuable when negotiating pay and promotion with your current employer, or when weighing whether you want to stay with your current employer.

Two of the best things about LinkedIn are (1) you don’t have to worry about your employer becoming suspicious that you might leave your current position, as they

user on Twitter, and I have to agree. The way LinkedIn works right now, you need to find connections through other means before you can reap the rewards, which is fine, but that hardly makes LinkedIn a one stop shop for business social networking.

Takeaways for IT Pros, Advice for Employers

While LinkedIn is not the social media tool for business that it’s often purported to be, it does have value as a fairly low-maintenance way to keep your name and information out in the ether for recruiters, friends, and potential employers to see. My advice would be to start an account as soon as you

LinkedIn has value as a low-maintenance way to keep your name and information out in the ether.

all of those connections’ connections too, then I have 265,800 people in my network.

The idea is that if someone two or three degrees away is looking for a contractor or employee in a given field, I can talk to the person that we are both connected to and be “introduced” to that person, potentially forming a business relationship.

Additionally, LinkedIn offers Groups, which let you join associations with like-minded individuals related to a variety of demographics—industry of employment, age, race, geographic area, etc. Through this, you can meet additional individuals and, ultimately, encounter additional business opportunities.

LinkedIn is quite lucrative for recruiters and consultants—anyone who needs to interact with a large variety of individuals. But, for someone who isn’t looking for contract work and is satisfied with his or her current employment, is LinkedIn worth the effort? That’s the question I posed on Twitter, and here are the responses I got.

LinkedIn Connects You to Recruiters

Of the responses I received, two IT pros mentioned that they have been solicited by recruiters while on LinkedIn. And it wasn’t the result of active questions and presence on LinkedIn; rather, simply having a passive

might if you posted a profile on Monster.com, and (2) that you can be fairly passive on LinkedIn, only stopping by every few months to update your information, and still receive many of the benefits. As one reader put it: “I think it’s good from an employee standpoint and from a recruiter standpoint. It may sound terrible, but there is only one person looking out for our best interests.”

Communication Limitations

As another reader and I discussed, LinkedIn can be quite frustrating because of the poor communication tools in it. Whereas Twitter and Facebook allow you to watch conversations between friends, family members, and colleagues, LinkedIn uses a fairly outdated model. LinkedIn lets you send private messages to other users (like an email), and it lets you pose general questions to all of the site’s users or just your connections (like a discussion board). And that’s pretty much the extent of its communication capabilities. (As one *Windows IT Pro* editor mentioned, if Facebook had the option to also have a business account, it might render LinkedIn completely obsolete, since Facebook has such superior communication tools.)

“The functionality [in LinkedIn] is such that you cannot approach people. This just does not work in the long run!” noted one

can, and build up as many valuable connections as you can. Change happens quickly, and you might find yourself no longer with your current employer (by your choice or not), so it’s best to build connections now and avoid an awkward approach later.

And if you’re interested in doing more in-depth networking, I recommend attending industry-related tradeshows or establishing a Twitter presence. Twitter allows you to start interesting conversations, gauge industry buzz, and connect with individuals who have a strong presence in your market.

Finally, a note to employers wondering what they can do to keep their employees from being poached by recruiters on LinkedIn: create an atmosphere in your organization where employees feel comfortable enough to honestly voice their concerns and frustrations with management. If you can do this, your employees won’t feel the need to find other opportunities behind your back. They’ll be open and transparent about their career plans, allowing you the opportunity to fight for the staff you really want to keep and seek replacements for others proactively, so you aren’t caught with your pants down. Who knows, maybe LinkedIn is the place to seek those candidates?

—Brian Reinholz
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New Data Breach Rule for Healthcare Companies

A new data security law recently went into effect as part of the U.S. Department of Health & Human Services (HHS) Health Information Technology for Economic and Clinical Health (HITECH) Act. This new law, called the "Breach Notification for Unsecured Protected Health Information," is aimed at health organizations covered by the Health Insurance Portability and Accountability Act (HIPAA).

According to the rule, only healthcare providers and healthcare plans that don't use HHS-approved techniques to encrypt or destroy information will be required to notify individuals within 60 days of a breach of such unsecured protected health information (PHI). Breaches that affect more than 500 people must be reported to the HHS, as well as to the media.

However, in an "interim final rule" version, the HHS amended the law to note that healthcare companies must publicly disclose data breaches only if the breach threatens significant financial or reputational harm to the individuals affected. And whether this risk is deemed significant is left up to the discretion of the healthcare company whose data has been compromised—which raises the hackles of opponents to the new rule, who contend that the amendment effectively guts the law.

Mark Bower, Voltage Security's director of information protection solutions, asserts that "the protection law should address everyone—including those who have already implemented encryption, since most encryption systems are point-to-point even when they say otherwise." In addition, Bower notes that "the bad guys are always looking for a way in, and in many cases they're highly sophisticated, organized criminals, so we'll keep bumping into a wall if we don't get smart and protect data end-to-end."

For the full text of the breach notification rule, go to <http://edocket.access.gpo.gov/2009/pdf/E9-20169.pdf>.

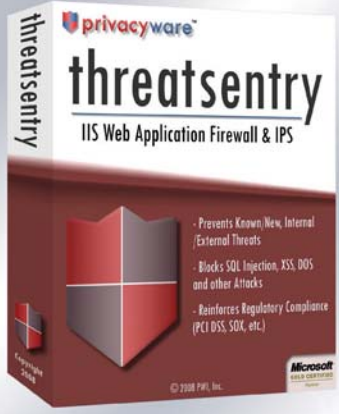
—Lavon Peters
InstantDoc ID 102885

"The bad guys are always looking for a way in, and in many cases they're highly sophisticated, organized criminals, so we'll keep bumping into a wall if we don't get smart and protect data end-to-end."

—Mark Bower, Voltage Security's
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PRODUCT OF THE MONTH



We're certain that the phrase "Anti-Glare Technology for Computer Nerds"—which heads up this week's most fascinating press release—will probably appeal to some geeky types, but we wonder whether the 85 percent of the world that doesn't identify themselves as "computer nerds" will be so understanding. The company Laptop Burka is offering a new product called GEEK SHEET, which offers "chipheads and laptop geeks all around the world a way to work outside and blog away with a proven portable space that reduces glare by 100 percent." The GEEK SHEET glare-reduction device is "breathable, lightweight, and mobile for laptop screens everywhere." It costs \$16.99. Visit Laptop Burka at www.laptopburka.com.

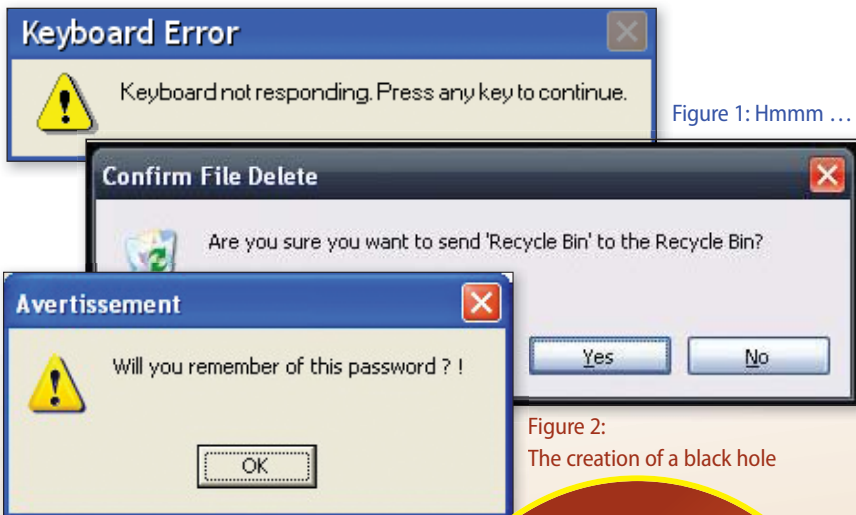


Figure 1: Hmmm ...

Figure 2:
The creation of a black hole

Figure 3: I probably won't remember of it

User Moment of the Month

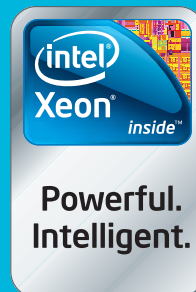
About a decade ago, I got a job working IT for a publishing company back east. When I walked in the door, I discovered that the company's meager hardware resources consisted of a couple systems with tiny hard drives and 3.5" disk drives. My new supervisor proudly showed me his weekly backup process, which he had been able to improve and make less time-consuming over time: He had discovered that he could accomplish an entire data backup (which normally required 10 discs) with only one disk. Curious, I asked how he had managed that. "Simple," he said, walking me through the process. Whenever the computer prompted him, *Is it OK to overwrite this floppy disk?*, he was clicking Yes and repeatedly overwriting his backup data. Needless to say, the backup policy changed that night. —Jacob

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